

PAPERS FROM THE SECOND

American Congress
On
General Semantics

PAPERS FROM THE SECOND
AMERICAN CONGRESS ON GENERAL SEMANTICS

Papers from the Second

*American Congress
on General Semantics*

University of Denver, August, 1941

NON-ARISTOTELIAN
METHODOLOGY (APPLIED)
FOR SANITY IN OUR TIME



Compiled and Edited by M. Kendig

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EDITOR'S ACKNOWLEDGMENTS

The task of editing and publishing these papers has been arduous beyond my expectations in May, 1942, when I undertook to ready the material for publication before the end of the year. In fact that date proved to be impossible even had I had no other duties, and I appreciate the patience with which both authors and subscribers have accepted the repeated delays in publication. Without involving them in my responsibility for the results, I would like to acknowledge my debt to those who have helped me complete the task.

The title *Consulting Editor* does not represent the extent of the help received from Wendell Johnson, professor of psychology and speech at the University of Iowa and fellow of the Institute of General Semantics. In spite of his heavy schedule of academic, research and clinical duties, he undertook to prepare a number of the papers for publication; promptly read and commented upon many others; gave valuable suggestions on some difficult problems; and even came to Chicago to work with us in the midst of a busy summer. Working with Wendell Johnson, I had the rare experience of maximum predictability in a co-worker and I can hardly imagine how we could have got on without his work and advice. With his background of formal research and clinical work, it goes almost without saying that Professor Johnson did not always see eye to eye with Korzybski and me in our evaluations of some of the papers, representing as they did such diversity of subjects and approaches as well as theoretical training and experience in applying general semantics. For this reason I should state that his sometimes vigorous negative evaluation of some papers printed here is a matter of record.

My thanks go to Dr. Charles B. Congdon of the University of Chicago, Dr. Raymond W. McNealy of Northwestern University, and Dr. Hervey Cleckley of the University of Georgia for critical reading and advice on papers dealing with medicine and psychiatry; and to S. I. Hayakawa, Ph.D., of Illinois Institute of Technology for editorial suggestions on some of the papers in the field of language and literature.

From May to September, Miss Isolde A. Henninger acted as assistant editor and thanks to her executive ability two-thirds of the papers had passed through the hands of our readers, been edited, and sent to the printer before she returned to Talladega College where she is professor of modern languages. I am grateful that Isolde Henninger let me persuade her to spend her summer doing this tedious work.

From November until the volume went to press in March, Sara Michie Harris, Ph.D., lately research associate on the staff of the *Dictionary of American English*, University of Chicago, and at one time associated with me as teacher of language and general semantics at the Barstow School, acted as editorial critic and was of great assistance in styling manuscripts for the press and in proof reading the galley and page proofs. I appreciate the spirit and technical proficiency with which Mrs. Harris carried out her part of the work.

I also want to express my warm appreciation to Miss Charlotte Schuchardt of the Institute for her continuous help in ways too numerous to mention; and to Mrs. Dona

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W. Brown of Kansas City, also at one time my associate in school work; Miss Virginia Nunn of Chicago; and Mr. David Malcolm, now ensign in the U.S.N.R., for their assistance in preparing papers for the press.

To Alfred Korzybski, I frankly do not know how to say thank you; how to describe adequately the extent of his help or the depth of my gratitude. Specifically, his help included reading and discussing most of the papers with me and approving my editorial emendations before the manuscripts were sent to the printer. The editing of some papers in Part One was done by him. He advised on the format and read through the galley proofs in the course of our discussions in deciding on the subtitle for the volume and the arrangement of the papers. My gratitude goes far beyond my particular indebtedness to him for his wisdom, his guidance and his work in connection with publishing this book, and beyond the privilege of working with him on the papers. It must go back over the years of close association with him since I first read *Science and Sanity* in 1934 and made my early attempts to apply the non-aristotelian system in my school program and my personal life. It must include the unique opportunities I have had for training in theoretical issues and personal applications which my position at the Institute for the past four years has given me. Perhaps it suffices to say this, that only the benefits I have received from working with Count Alfred made it possible for me to carry through the program of the Second American Congress on General Semantics and the far more exacting task of editing and publishing these papers on his work.

M. K.

Chicago, March 15, 1943

ACKNOWLEDGMENT BY ALFRED KORZYBSKI

I wish to express my deep gratitude to Chancellor Caleb F. Gates, Jr., of the University of Denver, the Honorary President of the Congress, Dr. Franklin Ebaugh of the University of Colorado, the President of the Congress, and to the organizers, sponsors, and officers for their efforts and good will which made the Congress such a success. I am particularly indebted, and I want to acknowledge it most warmly, to Miss M. Kendig, for her strenuous work in compiling and editing the papers in this volume. I know personally what extremely laborious and difficult work this was, particularly under war conditions, and it was only due to her unflinching efforts that this volume has been produced.

My words of appreciation can not convey the depth of my feelings of gratitude for the Congress and to the Congress contributors and those responsible for this volume. In many ways this Second Congress with all the empirical data and the whole atmosphere was an unique experience for me. After the struggle to formulate a non-aristotelian system, to see that it does actually work in practice was a sort of fruition of a lifetime's work. So once more I want to express my deep-felt thanks to those who contributed to that memorable occasion.

A. K.

May, 1943

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† Contributed by special invitation. See my Introduction.—Editor.

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INTRODUCTION

Perhaps the outstanding contribution of Korzybski lies in the degree to which he has succeeded in formulating the general methodology of science. . . . and in relating that method to problems of personal and social organization. Indeed, the entire system of general semantics is remarkably abstracted in the three words which comprise the title of Korzybski's main work, *Science and Sanity*, in which the *and* does not imply *plus*, but rather *as*. Science *as method* turns out to be, within the framework of general semantics, practically synonymous with sanity *as method*. Extensionalization, the basic principle of general semantics, is seen as amounting to science-in-action, science as method applied . . . from moment to moment in daily life, as the general method of sanity.—Wendell Johnson, 'Research Program in Language Behavior' in this volume.

These papers from the Second American Congress on General Semantics for the most part report or discuss empirical applications of Korzybski's non-aristotelian methodology to some problems conditioning human adjustment or sanity in our time. The others deal with matters pertinently related to non-aristotelian orientations and the methodology.

It happens appropriately that this volume is published in a year which marks two other significant anniversaries in the development of Korzybski's work in general semantics. 1943 is the tenth year since his *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* was published. And it is the fifth year since the Institute of General Semantics was founded as a teaching center to encourage applications and research which would test empirically the general usefulness of the non-aristotelian methodology. These papers constitute both a practical sequel or appendix to *Science and Sanity* and a summation of the pioneer period in the work of the Institute.

The papers can be characterized as examples of general-semantics-in-action, and so give a comprehensive extensional answer to such general questions as, what is general semantics, what is it good for? A host of more specific questions and some confusions about the nature, aims and claims of general semantics as an empirical discipline will also be cleared up by a careful reading of the papers.

In sum, these papers are demonstrating in one way or another that it is possible to make a *direct* attack on some sources of our present difficulties; that fundamentally we are simply self-paralyzed by an inadequate general method of evaluation which is largely unconscious; that we can directly change 'fixed' attitudes and broaden intelligence by changing our method of evaluating ourselves and the world; that a more adequate method has been formulated which generally does this when applied; that the method is proving to be generally workable and teachable and so implies a program for mass education and re-education in our time. The Congress papers elucidate and underscore in unmistakable fashion the implications of this method for immediate personal and general usefulness in a direct attack on some of our problems, professional, scientific and social, economic and political, national and international, etc.

In *Science and Sanity* the non-aristotelian system and general semantics, as a general theory and method of evaluation and an empirical natural science, are inductively

presented. In point of scientific data, theory and method, the papers do not cover the formulations of general semantics and the present volume can not be properly evaluated apart from Korzybski's major work. Readers new to the discipline must be referred to *Science and Sanity* for study if they are seriously interested in making their own applications of the methodology. However, they do not need any previous knowledge of general semantics to read the Congress papers profitably. These demonstrations of how a non-aristotelian system of orientation, evaluation, etc., has been applied by so many different persons in such a wide variety of human activities will probably clear away difficulties which some people have in understanding the scientific background and theoretical structure of general semantics as essential to the practical aims, the simplicity and general workability of the methodology. Certainly one result of the publication of the Congress contributions should be the elimination of some of the false-knowledge about general semantics which is current in some circles. This should, I believe, lead to wider co-operation and co-ordination of efforts.

The contributions which we have selected to publish as **BOOK ONE** serve the purposes of a general introduction to the subject. It is advisable that they be read in sequence as arranged and this applies to all the other papers.

The leading terms as well as some of the principles and techniques of general semantics and the premises of the non-aristotelian system are explained in Korzybski's paper (page 93). Doctor Campbell's paper (page 117) will further clarify the neurological bases of general semantics which are so important for understanding the effectiveness of the method. Anyone unfamiliar with the special terminology can rely on understanding it in the contexts in which it is used in the papers. As Korzybski points out, all the 'special' terms used in general semantics are ordinary English; can be found in the Oxford English Dictionary. Some of them are simply words which we may not customarily use, or do not use in the exact sense in which by their structural implications they play an essential role in the non-aristotelian system. A few explanatory footnotes have been added to some of the papers, where the contributor's use of the formulations and techniques of general semantics is not clarified by the context.

For readers who are now actively applying the discipline, the Congress papers will doubtless open up new possibilities and suggest improvements in their own work. The general spirit of the Congress contributors who discuss their applications here is experimental and self-critical. Some show that the process of self-training through application has both broadened and deepened their insights and led to greater specificity. Many give valuable hints on what not to do. And there seems to be little evidence that anyone feels he has found the procedures, etc., best suited to the applications of general semantics in his field.

General semantics as a new discipline needs constructive criticism if it is to be developed to anywhere near its potential usefulness. It needs great numbers of experiments in many fields to refine, amplify and expand the formulations and find the most useful procedures in application. Because of the empirical nature of the work we must look for constructive criticism to those who have 'mastered' the non-aristotelian method through making honest efforts to apply it. The critical experimental attitude shown in the papers is a healthy sign. It is especially welcome at this time

when a good deal of critical writing has been done on the subject by those who have not *studied* the sources or who will not put themselves through some actual use-training. Criticism on a priori grounds is not useful. It usually involves 'philosophic arguments' founded on presuppositions, misinterpretations, misunderstandings, etc., and in general it is confused and confusing. For example, some writers confuse *general semantics* with 'semantics' ('meaning'), the 'new word in education' as someone has called it. Through failure to differentiate a general theory of evaluation from work in 'meaning' they miss the point of the necessity for the revision of fundamental premises and method, for the formulation of explicit techniques, etc., before the problems of symbolism, language, interpretation, communication, etc., can be successfully cleared up, in life, or in any special field of work.¹

I

The program of the Congress has been reprinted and is bound in with each copy of this volume. This program gives the reader the immediate historical background of the Congress: the officers, sponsoring committees, arrangements, organization and theme of the program. The decision to hold the Congress at the University of Denver in August, 1941, was not made until March first of that year.² The announcement of the Congress and call for papers were sent out in April to some two thousand persons or institutions known to be interested in the subject.

Citing these dates suggests the conditions under which the program was organized and the papers produced. For both the organizers and the contributors to the Congress, it was a race against time in the midst of world chaos, accelerating insecurity and disintegration of national morale. Our temerity in attempting to organize the Congress in four months, and those the busiest for the majority of the contributors (75 percent were in academic life), has been justified by developments. Had we aimed at an 'ideal' program 'completely' representative of those applying general semantics and doing allied work, had we taken a year to secure papers and arrange the pro-

¹ For the methodological impasse involved in dealing with 'meaning', a summary of aristotelian *versus* non-aristotelian factors, and diagrammatic explanations of the consequences of changes in premises, assumptions, etc., see 'Foreword' by Korzybski and Kendig, General Semantics Monographs, No. III, *A Theory of Meaning Analyzed* by Pollock et al., pp. vii-xvi. The difference between problems of 'meaning' as such and adequate evaluation in life-issues is conveyed in the following passage in this Foreword:

'... watch a frightened rabbit freeze into immobility and invisibility in the middle of a field and thus escape detection and death and then watch the same rabbit freeze in the middle of the highway when he is frightened by the lights of an oncoming car. Here behavior appropriate [adequate] for one setting is carried over into a setting in which it is fatal.' The 'meaning' to the rabbit may be said to be the 'same' in both 'contexts', but his *survival evaluation* is *inadequate* in the second empirical situation. In hospitals for 'mentally' ill, patients are as full of 'meanings' as anybody else, perhaps even more so, but their evaluations are inadequate for life adjustment and this is why they have to be locked up.

² The fact that a congress on general semantics was held in 1941 is due to Professor Elwood Murray of the University of Denver. In early February he suggested that we consider the possibility of holding a congress that summer under the auspices of the University, and it was due to his energy and persistence that the plans were finally agreed upon and put through. Eventually we acted as co-organizers: he was responsible for the arrangements at Denver while I undertook to secure the papers, organize and direct the program, etc.

gram as common sense and the experience of others said we should, there could have been no Congress on General Semantics until after this war. By August, 1942, many of the contributors were in the armed forces, or otherwise engaged in war work, and travel conditions alone would have prevented the holding of a congress.

Some three hundred persons from twenty-nine states and Hawaii registered and attended the Congress. Most authors presented their contributions in person, coming from places as far away as the Atlantic and Pacific coasts, and Texas. A few authors could not attend but most of them sent manuscripts which were read at the Congress. The national emergency for the most part accounted for the non-preparation of the other promised papers and later for the inability of some authors to supply manuscripts of papers which they had presented. Of the one hundred papers and discussions promised for the Congress and announced in the program, some ninety were presented at Denver.

II

The eighty contributions printed in this volume represent all those for which we received manuscripts that the editor could prepare for publication. In some cases, where the original contribution was delivered extempore, substitute papers have been used; in others, only abstracts or summaries were available. A few authors asked to have their papers omitted because of lack of time for revising their manuscripts, and some of those who delivered two or more papers at the Congress combined these contributions in the final manuscript submitted for publication. The Congress budget did not provide for stenographic reporting of the many valuable contributions which developed in the course of the discussions of the papers, especially at the post-Congress meetings. However, some of the shorter papers in this volume represent manuscripts furnished by those who could not find time to prepare formal papers and agreed to serve as discussants in the various sectional meetings of the Congress.

Preparing the papers for publication offered some particular problems of editorial emendation—especially as this volume will probably be taken as a 'guide' for future writing on general semantics. As Henri Poincaré has said, 'all the scientist creates in a fact is the language in which he enunciates it.' The terms selected by Korzybski for the adequacy of their structural implications and the general way in which language is used in the formulations carry or reflect the premises, orientations, etc., of the non-aristotelian system and general semantics. This linguistic structure of general semantics together with use of the extensional devices constitute the neuro-evaluational psycho-logical vehicle of the revised attitudes. The structural implications of words and the 'logic' embedded in forms of expression reflect our orientations and condition our evaluations to a degree which is seldom realized.³

Even the 'simple' matter of whether we say *the* or *a* may be important. For in some instances it may reflect aristotelian finalistic, two-valued, *all*-ness attitudes as

³ Whorf's paper gives some revealing insights on this from the field of anthropology and comparative linguistics. The problem is treated from other points of view in Rosser's paper on the many-valued logics, required for 'thinking' in the new physics, and Reiser's paper on the classical physical *versus* modern scientific structural assumptions; in the papers by Kelley on the mechanisms of self-deception and Campbell on the neuropsychiatric foundations and clinical applications of general semantics, and in other papers throughout the book.

against flexible, infinite-valued attitudes of maximum probability, *non-allness*, etc. For instance, to take an obvious example, whether we say *the* or *a* cause reflects our attitudes towards causality, and often affects our actions in a crucial way, personally and socially as well as in medical and other scientific research (as illustrated in the papers of Burridge, Barrett and others). Developing a 'linguistic conscience' in such 'theoretical' matters takes time but is essential to the discipline and to conveying it properly. For more on this point, see my footnote on page 475 where I have developed it in connection with the terminology of language theories used in the teaching of English. Let me suggest that writers pay attention to the remarks in this footnote. It was placed at that point in this book because the academic inclination to orthodox conformity exhibited in using the old elementalistic, two-valued terminology in education has led to the usual results of appeasement. Judging by the criticisms evoked, it has tended to increase, not to clarify, confusions and blockages in understanding the scope, aims and 'claims' of general semantics in language teaching and general education.

In editing papers which represent the use of general semantics formulations and applications of the methodology, I have introduced changes to secure some measure of uniformity. In a system, for example, the premises, the principles, the description of mechanisms, etc., are all strictly interconnected. For instance, *elementalism* results from identification, confusion of orders of abstraction, projection, objectification, etc., etc., and might be indicated in a number of ways. But to avoid confusing the reader, I have attempted to introduce some uniformity in the contributors' use of terminology and formulation of principles, mechanisms, etc. I have also revised occasionally the uses of other words and forms of expression at points where their structural implications were 'misleading' in the light of the non-aristotelian premises, infinite-valued orientations, etc. The implicit or explicit application of the extensional devices of general semantics, especially the introduction of *quotation marks*, has often taken care of the difficulties. These and other editorial emendations have been made with the approval of the contributors and have not changed the factual content of the papers.

The above remarks on special editing do not apply in most cases to the papers indicated by a † before the authors' names in the contents pages, which were contributed by special invitation. Subjects, data, treatment, points of view in these papers are contributions to non-aristotelian orientations or expand some aspect of general semantics but the authors were not explicitly (consciously) applying the new methodology. In these papers and a few others of a hortatory character we did not attempt to secure conformity to the terminology and formulations of general semantics. This will explain the lack of consistency (especially the 'is of identity' and absence of quotation marks around words with elementalistic implications, such as 'idea,' 'emotion,' 'concept,' etc.) in editing the papers by Whorf, Lieber, Rosser, Meyer, Petersen, Burridge, Rennie, Fairchild, Pollock, Reuning, H. N. Wieman, etc. Other exceptions are noted where they occur.

III

The papers represent the work of some seventy-three different authors. The biographical sketches in the back of this book give some pertinent data about these con-

tributors, their educational and professional backgrounds, interests, accomplishments, etc. Their status in relation to general semantics and training in non-aristotelian orientations and methodology can be briefly described.

Using the word *student* in its broadest sense, sixty-three of the contributors can be classified as students of general semantics. The other ten are outstanding persons in their fields whose work or the points of view expressed in their papers are significantly related to the subject matter of general semantics. Of the sixty-three who had carried on serious independent or directed study of *Science and Sanity* and the other literature on the subject, fifty-three have attended one or more of the seminar lecture training courses conducted by Korzybski at the Institute of General Semantics in Chicago or elsewhere since 1938; several had also studied with him previous to the founding of the Institute. The experience of these contributors in applying the methodology in their personal lives as well as their work varies all the way from six years in a very few cases, to one year or less; a point the reader is asked to remember in evaluating the various contributions.⁴

Learning to apply general semantics is similar to learning to fly, in that no one ever became a pilot by studying the principles of aeronautics and watching a demonstration; much less by ability to carry on 'philosophic disputations' on the subject. This is an over-simple analogy but perhaps it will suggest the complexities involved in a re-education which aims to bring so many unconscious habitual responses under conscious control. It does suggest why it has taken time and unrelenting practice for the 'pioneers' to train themselves: why many students who are seriously using general semantics in their work have felt the need of attending not one but several seminar training courses.⁵ It bears on the fact that in this first volume of reports on pioneering work in various fields of application, the majority of these papers are by contributors

⁴ Perhaps it is well to straighten out here some misapprehensions about the role of general semantics. Proficiency in general semantics is not some sort of substitute for special knowledge or technical proficiency in the art of teaching or in any profession and field of specialization. That is to say that no one has any more standing as a worker in general semantics applied to his own field than he essentially has in that field. However well-known or unknown he may be is, of course, another matter entirely. We simply have to investigate the human results of the given individual's work at a date, not his official recognition in his field. 'General semantics makes good doctors better doctors, good psychiatrists better psychiatrists, good teachers better teachers, etc., etc., etc.,' an aphorism for which I am indebted to Caleb F. Gates, Jr., and which seems to be supported by the evidence in these papers. In other words general semantics is not a substitute for anything else. It might best be called a catalyst since it facilitates our work, our 'know-how', and opens up new possibilities in applying what we do know. To quote Rosser, 'scrutiny of familiar situations from a novel point of view . . . can not fail to bring to light useful ideas that are at present unnoticed. The effort to acquire a new point of view will free our minds of preconceived ideas and facilitate the discovery of other new points of view.'

⁵ In theory and practice general semantics is a remarkably simple discipline. The extensional method is generally workable. It can be taught directly without giving any scientific or theoretical background, especially to young children. (See, for instance, the report of Miss Semmelmeier who had also taught it very simply to the teachers of her pre-reading group.) Those who have not studied general semantics but believe it is 'too difficult' except for 'high-brows' should recall a story of the last war: the American soldier in France who marveled that 'even the very small children could understand French' when he couldn't. For children before their nervous systems have been canalized in intension by the neuro-semantic and neuro-linguistic environment, the extensional attitude is natural. Reversing life-time intensional habits of adults constantly reinforced by the structure of language is not so simple as scraping and re-grooving a recording disk, but

who have had such training at the Institute. As organized teaching and training in general semantics as such begins to be carried on more generally in universities and colleges, doubtless by the time of the next congress, there will be many more reports by those who have not studied directly with Korzybski.

Here we should mention another point; namely, differences in the character of the interests of those who study general semantics. Our experience shows that many approach the work from a practical scientific point of view to improve their teaching, medical practice, etc. Others, and their numbers are not negligible, study general semantics for the sake of their own adjustment, not necessarily strictly personal, but due to an urge to harmonize some difficult interpersonal relations in their family or other groups. As we know from a broader point of view the majority of people have such difficulties to face and the solution of these difficulties is an important factor in optimum effectiveness and happiness in life and work. Many feel with Confucius:

The ancients who desired to illustrate illustrious virtue throughout the empire, first ordered well their own state. Wishing to order well their own state, they first regulated their families. Wishing to regulate their families, they first cultivated their own persons. Wishing to cultivate their persons, they first rectified their heart. Wishing to rectify their hearts, they first sought to be sincere in their thoughts. Wishing to be sincere in their thoughts, they extended their knowledge to the utmost; and this extension of knowledge lay in the investigation of things. Things being investigated, knowledge became complete. Their knowledge being complete, their thoughts were sincere. Their thoughts being sincere, their hearts were then rectified. Their heart being rectified, their persons were cultivated. Their persons being cultivated, their families were regulated. Their family being regulated, their states were rightly governed. Their states being rightly governed, their whole empire was made tranquil and happy. From the emperor down to the mass of the people, all must consider the cultivation of the person, the root of every thing besides.

Granted this is old wisdom but I believe it is most important that in the present world chaos we should emphasize this interrelation of personal and social adjustment. This wisdom so far had no direct methods for application. A great many people long for such a method which general semantics now attempts to supply. What was just said is not

something like that has to happen. Re-canalizing our nervous system offers real difficulties. Under controlled conditions of class work, or psychotherapy, etc., it can be done in varying degrees, usually enough to change the fundamental attitudes which condition evaluations and life adjustments. Adults can be taught in much the same way as Semmel-meyer's children. That is, adults can be trained in extension by the use of extensional methods in dealing with them and their verbalizations, i.e., by constant insistence on explicit and implicit use of the extensional devices and the three premises, non-is-ness, non-allness and self-reflexiveness, which automatically promote consciousness of abstracting; by insisting that they *order* their reactions, go to *facts first* (observe, give examples, etc.) before they generalize. Lee for one has shown this in adult public speaking classes and forum work; and we have plenty of examples of it in the papers on psychotherapy and psycho-logical counseling, as well as on the teaching of college and younger groups. However to start with, many workers have to 'really master' the discipline. In order to be 'convinced' and so be convincing and able to teach, they have to get the scientific backgrounds, they have to study and actually train themselves so that the new method functions in their reactions as automatically as the old. We all are extensional some of the time; the problem is to understand the mechanisms, and so automatically use extensional method 'all' of the time. It is interesting in this connection to note that the majority of the contributors are well under forty years of age, most of them in their early thirties or younger.

speculation or broad generalization. It is based on empirical observations of living facts as many of Korzybski's students will realize. Korzybski hopes some day to publish some personal case histories illustrating mechanisms and improved life adjustments which his students have reported to him.

IV

As to what percentage of those who are actively applying general semantics is represented by the contributors to the Congress, it is practically impossible to state. Generally speaking, we are most closely in touch with those who have attended the Institute courses since 1938. Up to the end of 1942 some thirty seminar courses have been conducted by Korzybski under Institute auspices. There are also several hundred persons who previously studied with Korzybski in the seminars he conducted in various parts of the country before the Institute was founded. By now other hundreds have worked and studied with those who have attended seminars. To my knowledge these papers represent considerably less than ten percent of these 'students' who are explicitly attempting to apply the methodology in some field of work.

But the seminar groups represent a relatively small number compared with all those who probably have been actively influenced one way or another in their work by the study of Korzybski's formulations: his ideological as well as his methodological contributions. In 1921, Korzybski first announced his time-binding theory in *Manhood of Humanity: The Science and Art of Human Engineering*.⁶ It went through four printings in three years and has never stopped selling. At present it is again being widely bought. Since publication in 1933 some six thousand copies of the textbook, *Science and Sanity*, have been sold to individuals and institutions in the United States and Territories, in South America, Europe, Africa, Australia, and Asia. About ten thousand persons have corresponded with the Institute; some represent simple inquiries, others lengthy correspondence and over long periods. Almost every week we hear of some 'new' person who has been carrying on independent study and application. For instance, the other day a woman leaned across the luncheon table to tell me her husband had been studying *Science and Sanity* for two years and said it had 'revolutionized his practice of law.'

So it is impossible to give accurate figures on how many are doing what with the methodology. However, the range of experience and degree of application evidenced in the Congress papers do, I believe, give a representative cross-section of progress and

⁶The extent of the ideological and methodological influence of this new 'image' of 'man' as a time-binding class of life could hardly be traced or evaluated at the present time. All of Korzybski's later work and the formulation of a non-aristotelian system and general semantics grow out of this application of physico-mathematical method to an analysis and description of life which sharply differentiates men and animals, but which includes all the human characteristics of 'man' in a dimensional hierarchy of nature. Seemingly the moral and ethical, the social and educational implications of time-binding are now only beginning to be made use of in a fundamental way; this, in connection with applications of the non-aristotelian methodology. Unlike most ideological contributions, the 'image' of 'man the time-binder' is intimately contained in a methodology explicitly fashioned to give it functional reality in the control of human affairs for adjustment and survival. The twelve years between the publication of *Manhood* and *Science and Sanity* were devoted to bringing about just that.

developments at the time of the Congress.⁷ On the other hand, the papers are not as representative when taken as a sampling of the many fields of work in which 'seminar students' are known to be explicitly using the methodology.⁸ Nevertheless when it came to publication, the variety of the work covered in the papers made the task of organization rather bewildering. This is suggested by the following alphabetical list of some sixty subjects represented by the contributions and the authors' 'specialties' (they could, of course, be classified in a variety of ways):

Administration	Gynecology and	Medical Education	Psychobiology
Aesthetics	Obstetrics	Medical Practice	Psychological Testing
Business	High School and Ele-	Mental Hygiene	Psychological Counseling
Comparative Linguistics	mentary Teaching	Meteorology	Psychology
Debate	History of Science	Neuropsychiatry	Psychology of Language
Dentistry and Dental	Horticulture	Nutrition	Psychotherapy
Research	Internal Medicine	Music	Public Speaking
Drama Research	Journalism	Pathology	Religion
Dramatics	Language Arts	Personnel Work	Reading and Remedial
Educational Research	Language Research	Philosophy	Reading
English Composition	Language Theory	Optometric Research	Rhetoric
English Literature	Lexicography	Physics	Social Work
Ethics	Linguistics	Physiology	Sociology
German	Literary Theory	Physiotherapy	Speech Arts
Government Relief	Logic	Poetics	Speech Pathology
Graduate Training	Magic	Primary Education	Surgery
Guidance	Marriage Counseling	Psychiatry	Teacher Training

V

In his opening address at the Congress, the first paper in this volume, Reiser expressed the 'hope that one result of this Congress will be to rescue general semantics from the separatists, working exclusively within their respective elementalistic disciplines. . . . and to emphasize that *general* semantics has applications in the field of "normal" psycho-logics as well as in psychiatry, and formulates no less a theory of nature than of the organism-as-a-whole-in-an-environment.'

For the Congress, the theme of the program and the functional arrangement of the papers had been chosen with such ends in view. The principle of non-elementalism was followed insofar as it could be while taking into consideration the subject-matter interests of the participants. The introductory papers and Korzybski's addresses were organized around the theme, 'General Semantics and the Methodological Foundations for Cultural Integration in Our Time,' and with other general papers were presented in the general sessions of the Congress. For the sectional meetings the papers were grouped in fourteen subject-matter sequences following four broad classifications of the material. These were described as the neuro-semantic and neuro-linguistic issues involved in problems dealt with in the field of psychosomatic medicine and related spe-

⁷ At present, 1943, a number of doctors, psychiatrists, teachers, etc., are sending in first reports on applications they are finding it possible to make in various branches of the armed forces and other war work. Eventually some of these applications will be reported in professional journals.

⁸ For example in the field of jurisprudence: we have reports from 'seminar students' who are explicitly applying non-aristotelian methodology in the preparation of briefs for the superior courts, in trying cases, handling witnesses, in dealing with clients and their problems, etc. The method has also been incorporated in recent books on patent law, evidence, etc. We regret that this and significant work being done in some other fields are not included in the Congress contributions.

cialties, in the general field of education on various levels (including science and mathematics), in the special area of speech and speech arts, and in public affairs.

As a program this plan worked out successfully at the Congress. When it came to publishing the papers it was not so satisfactory from a non-aristotelian point of view and the above list suggests why.

It seems practically impossible to represent in the form of a static diagram general semantics as orientation and method in relation to the human being and the fields of knowledge, human activities, etc. Considerations of time-binding, self-reflexiveness, circularity, multiordinality, etc., in all human problems, the neuro-semantic and neuro-linguistic environment and mechanisms in the human nervous system, etc., make any static two-dimensional form of representation entirely inadequate to represent the situation. However, if we are aware of these limitations as the author was, Wendell Johnson's diagram on page 373 will be useful in visualizing general semantics, the subject and the general orientation and method of evaluation in its interrelations with the traditional fields of knowledge and human activity. Even these over-simplified relationships are much more complex than the diagram suggests. Practically all fields overlap in very many ways and the same is true of the Congress papers. Points especially important for a person in one field are to be found in papers on specialties which he might be inclined to ignore as entirely unconnected with his work or interests. This is unavoidable no matter how the papers are arranged and I can only emphasize that the volume should be read as a whole and in the sequence, determined by the *functional* approach to the problems dealt with in the papers.

For students of general semantics, the use-value of any standard subject-matter arrangement would be just as unsatisfactory as it would be an elementalistic approach to the interconnected problems of the unity of knowledge and personal and social adjustment. It would represent about as much methodological unity as the course listings in a university catalogue. In organizing the papers for publication we were up against this old difficulty of compartmentalization of knowledge and I would like to enlarge on that problem in education from the non-aristotelian point of view.

The revolt against departmentalization in 'modern' education is now 'ancient history'. Yet we have little to show for it in education, much less in life and the conduct of human affairs. Everybody agrees with the truism that a pile of bricks does not make a building. But the difficulties with the orthodox evaluations persist. The problem of methodological unity remains. A good measure of cultural chaos and disintegration as evidenced, for example, in the breakdown of intelligence in applying what we 'know' to the handling of human affairs, can certainly be traced back to the elementalistic objectification of the fields of knowledge. They are still treated as if they were a pile of distinct and self-generated 'entities', unrelated to each other and the human beings who create and use knowledge. And this goes on in spite of all the excellent analyses and preachments to the contrary. Current efforts at synthesis and unification are constantly short-circuited not so much, it seems, by administrative difficulties and the 'vested interests' as by ingrained elementalistic habits of orientation, evaluation, etc. It seems apparent they will continue to be short-circuited until we break through this aristotelian elementalism which is *in us*, the educators, not in the curriculum as such. For doing this, we have a strong offensive weapon in general semantics.

In their papers Wendell Johnson and Francis Chisholm, among others, elaborate on some of the academic possibilities. Many others in papers on applications in teaching note the vivifying effects on students' interest and capacity when they are released from the artificial images of 'the subjects' as water-tight 'entities'.* What I would like to emphasize here is this: That introducing the non-aristotelian orientations and the methods of general semantics makes it possible to secure those effects without disturbing the time-tested manageable units of subject matter in teaching, or even the departmental set-up (which two considerations have hitherto been considered the biggest stumbling block to functionalizing education). With general semantics we can preserve, even raise, high standards of scholarship in the various disciplines and at the same time unify and humanize knowledge; we can explicitly blend the orientations of modern science with the so-called 'humanities'; we can abstract human time-binding values from science and make them function in our dynamic adjustment and survival on human levels.⁹

VI

In view of our intention to have this volume represent an application of the general semantics point of view, we experimented with various ways of organizing and presenting the papers. To emphasize the usefulness of general semantics in education, science and life, we chose what seemed the most extensional non-elementalistic approach which would unify the papers and bring out the significance of the individual contributions. To do this it was necessary to relate them all to one general notion, how we use our human nervous systems; that is, how to control our neuro-semantic and neuro-linguistic environment which condition our evaluations, activities and adjustment one way or the other no matter what we are doing or 'thinking' in any field whatsoever.

The approach chosen is explicit in Korzybski's description of his work as a theory of sanity (a general theory of evaluation in relation to a dynamic human adjustment). The functional basis on which the papers are arranged is derived from this approach to adjustment as a problem of the control of self-reflexiveness, the process of time-binding, etc. Both are reflected in the subtitle of the volume, 'Non-aristotelian Methodology Applied for Sanity in Our Time.' This approach brings out the underlying methodological unity of the papers and is more intrinsic to the theoretical structure of general semantics than the theme of the Congress program. It extensionalizes the problem of 'cultural integration' down to the 'reality units' we have to work with, the nervous systems of $Smith_1$, $Smith_2$, $Smith_3$. . . $Smith_n$ who can change, and can be changed by, the neuro-semantic and neuro-linguistic environment. We focus on the neuro-semantic and neuro-linguistic factors in human activities as they work for or

* This is of course only a particular case of self-reflexiveness and of the general benefits derived from revising our attitudes and habits of 'thought' inherited through the neuro-semantic and neuro-linguistic environment. In other words the students' false 'master map of reality' is so revised by the techniques of general semantics that they 'see' the world in terms of invariant relations under constant transformation. And so they are no longer blocked by a static world picture of elementalistic 'entities' which the structure of our substantive subject-predicate language implies and leads us to expect.

⁹ See footnote 6.

against the dynamic survival adjustment, the sanity of Smith_n, the extensional 'units' back of the high order abstractions, societies, cultures, civilizations, etc.

In reading, it might be useful to visualize the diagram (page 373) in another way which would better represent our functional approach in organizing the papers. I suggest that the reader include 'Smith₁, Smith₂, Smith₃, etc.' inside the big circle and so visualize the overlapping circles not only as fields of knowledge, etc., in their interrelations with general semantics but as they are related to Smith's evaluations, his sanity and adjustment. It is advisable to take Smith_n seriously. He is not just the other fellow—he is you and I who work in the various fields. He is both 'the knower and the known,' 'the marble and the sculptor.'

M. KENDIG.

BOOK ONE

GENERAL INTRODUCTORY TO
NON-ARISTOTELIAN ORIENTATIONS AND THE
METHODOLOGY WITH RELATED SUBJECTS

HISTORICAL-CULTURAL SIGNIFICANCE OF NON-ARISTOTELIAN MOVEMENT AND THE METHODOLOGICAL CONTRIBUTIONS OF KORZYBSKI

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Few today would contest the observation that 'modern civilization'—as the historian euphemistically terms it—is approaching the end of its life cycle. We are witnessing actually the collapse of a world. A prophecy ascribed to Hitler asserts that a process of change that has lasted for a thousand years is approaching its completion. An old world is dying; perhaps a new world is being born. When the summer solstice of 1940 saw the continent of Europe overrun by Nazi invaders, the prophecy of Hitler, 'Man's solar period is coming to an end,' became deed. The 'world' of our ancestors will soon be in ruins. And, for better or worse, there will be no resurrection of its forms and institutions.

As the 'wave of the past' now rapidly runs its course, we see more clearly that no wistful nostalgia will ever bring it back. Already a new world is in the making. For us who face this new world no requiem is now appropriate. Let the dead bury the dead. The believers in historical periodicity will see in this 'new world', which is emerging, merely a cyclical return to some older form of social pattern—the reinstatement of some despotism as old as human history. Others will see in the shape of things to come, the dawning of a genuinely novel civilization filled with limitless possibilities of human enterprise and progress. But those of us who feel that before we try to look ahead we should glance back and try to understand the world that was, and why it failed, will want to pause for a moment and retrospect. Before the pageant of Western civilization slips into some recess of historical archaeology, let us look it over and get an indelible imprint of its main features.

As students of human history, as philosophers, as educators, as psychologists and preachers, we want to know: Why is this world of our forefathers smitten and dismembered; or like the catacomb of the League of Nations, an untouched and silent cenotaph to our abandoned hopes for a humane world? Why is that continent, the cradle of our civilization, fading into a catastrophe unequalled in the records of man? Why is it in collapse? What lesson can we learn, even at this late date? Can we ever hope to master the savage and sadistic *élan* which now drives the peoples of the world to hatred and to barbarism? Are the heralds of the 'master-race' correct when they tell us that it is the fundamental error of jurists and law-makers to think that they can create life by means of a constitution and a code of laws? Is the Fascist ideology of force, the doctrine that 'artificial construction violates life,' to prevail? Is Hitler correct when he affirms that the pursuit of the random path of intelligence was the real defection of man from his divine mission? If we can meet the challenge of this primitivism and streamlined brutality, can we again secure some measure of mastery of the social universe, and subdue it for purposes of further human endeavor? What should be the shape of things to come, if we can reconstitute a world order based

on sane adjustments? What constitutes sanity? And what are the factors involved in human betterment?

II

The consideration of these and many other related questions is now forced upon us. In order to provide the general context, it is appropriate at this Opening of the Congress to sketch briefly the frame of reference within which our discussions will take place. All of you here have been influenced in no small measure by the science of general semantics. Presumably you are all familiar with the contributions of Alfred Korzybski to this field. But possibly some of you, in spite of the fact that *general semantics* constitutes a non-elementalistic methodology, are inclined to look upon yourselves as 'specialists'—as experts in psychiatry, or speech, or neurology, or education, or law, etc. Let us hope that one result of this Congress will be to rescue general semantics from the separatists, working exclusively within their respective elementalistic disciplines. If 'semantics' is to be something more than an esoteric menu card of the 'logical positivists', etc., we must emphasize that *general semantics* has applications in the field of 'normal' psycho-logics as well as in psychiatry, and formulates no less a theory of nature than of the organism-as-a-whole-in-an-environment.

In order to state the analysis of our difficulties as a general semanticist views the situation, I shall go back to Korzybski's earlier book, *The Manhood of Humanity*,¹ where this analysis was first presented. In order to outline Korzybski's methodology for dealing with the ills of society, I shall show how the notion of *time-binding* functions as the basic formulation of general semantics and of social sanity as developed in the later book, *Science and Sanity*.² Some critics hold that the reappearance of the time-binding terminology in the second book is structurally accidental, and that the second book is independent of the first. In opposition to this view, I shall indicate why such a view is completely mistaken. The reappearance of 'time-binding' in the latter book is not merely a verbal perseveration.

In order to provide an outline for this general survey, let me epitomize the situation in this manner:

For almost twenty-five centuries the human intellect has been guided by the axioms of that great creator of Western culture whom the Mediaevals designated as *The Philosopher*—the 'master of them that know'. The essential ingredient of the culture-pattern of the Western world, which gave it whatever unity it possessed, was a common semantics: that is, a common language structure (the Indo-European languages), a common science, and a common set of values. The 'logic' of this era of culture was the logic of Aristotle, and the aristotelian 'laws of thought' provided the psycho-logical basis for all our science, philosophy, religion, politics, etc.

The fundamental axiom of this common logic, science and ethics was the famous and time-honored 'law of identity'. This most fundamental assumption of Greek doctrine, which became the foundation of Western science and culture, and which may

¹ Alfred Korzybski, *Manhood of Humanity: The Science and Art of Human Engineering* (New York: E. P. Dutton and Co., 1921).

² Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

be called the postulate of the *absolute individuality of substance* (the 'subject of predication'), culminated in the doctrine that any system is self-identical, is independent of its 'environment', and that in science we can investigate such individual systems and determine to any desired degree of accuracy the 'state' and the 'properties' of such systems. Proceeding on the assumption that the so-called 'laws of thought' are a reflection of the culture-pattern of a civilization, it has become clear to us now that the fundamental assumption of Western civilization is a product of the cultural evolution which exaggerated the social atomism of the human self. Resting on certain unconscious structural assumptions about nature, and crystallized into widely prevailing 'habits of thought', the grammatical and linguistic patterns of Indo-European science and philosophy were thus exalted into ultimate 'laws' of 'reason' and of nature. It is probably no exaggeration to state that, 'rugged individualism' in economic-political theory is a product of the metaphysical individuality of aristotelian logic, and that this in turn reflects the transition from the earlier level of customary morality of the Greeks to the later extreme individualism of the classical Greek philosophers. Such is the record of Western culture until the contemporary period.

Now we witness the break-down of the old semantics. The traditional values and evaluations are on the way out. Disappearing, too, is the 'rugged individualism' of our ancestors. The old logic and the old languages have produced a confusion of tongues, a Tower of Babel, which is now collapsing of its own inner structural weaknesses. Aristotelian civilization, after twenty-five hundred years of ups and downs, is finally in ruins. We now face a new era in the advance of the human race—the coming age of non-aristotelian civilization. Viewed in this way, the disintegration of our culture is only the inevitable concomitant of, and necessary prelude to, the fabrication of a new world culture.

This survey, even though it is given in words taken from my own volume,³ is based on Korzybski's analysis of the 'stages of civilization' into three periods of human development.⁴

From the Korzybskian point of view, the difficulties that confront our civilization arise in large measure from the fact that socially we are still functioning in the second stage, in accordance with the time-honored though now outworn and obsolete principles of orientation ('laws of thought', etc.): and that to run a large and socially intricate society, we need to get beyond the social un-sanity of these verbal fictions, elementalistic formulations, confusions of various orders of abstractions, etc., which have now become completely inadequate in a universe of dynamic processes and non-elementalistic 'realities'. If the depressing crescendo continues to move unchecked and unabated, the world will continue on the road to semantic suicide.

III

We have said that the initial basis for this diagnosis is to be found in Korzybski's first book, *The Manhood of Humanity*. Here we meet the now familiar thesis that our scientific-technological progress has outstripped our ethical-social progress. We have

³ Oliver L. Reiser, *The Promise of Scientific Humanism* (New York: Oskar Piest, 1940).

⁴ Alfred Korzybski, *Science and Sanity*, p. 197.

heard this statement before, but its import in Korzybskian general semantics is quite different from what many persons may want to read into it.

Korzybski begins with the definition of progress as a cumulative process of co-ordinating 'ideas' with 'reality'.⁵ In the physical sciences we find a measure of exactness in these correlations. But there still is no human progress if this technological-scientific advance is not accompanied by a corresponding co-ordination in the other fields of government, ethics, law, etc.—the fields of the so-called social sciences. All of these matters are interdependent and interlocking, and it is therefore of prime importance that progress in the social field keep abreast of progress in scientific developments.

While this is the 'ideal' situation, in actual fact, as Korzybski points out, progress in the physical sciences and progress in the social sciences have been achieved at two different rates of advancement. In the field of the physical sciences, advancement has been achieved at a geometric ratio. As Korzybski says:

By virtue of the advancement that has been going on with logarithmic rapidity in invention, in mathematics, in physics, in chemistry, in biology, in astronomy and in applications of them, time, space, and matter have been conquered to such an extent that the globe, once so seemingly vast, has virtually shrunk to the dimensions of an ancient province.⁶

In the meantime, the so-called social sciences have lagged behind. They have not kept pace with the rapid progress in scientific affairs, partly because the social studies have been hampered by traditions and the habits of evaluation of a bygone world, partly because they have depended upon the methods of verbalistic 'philosophy', partly because the social sciences have been dominated by political, religious and other vested interests upon whose good will educational systems are dependent, etc.

'Philosophy', law, ethics and the like, to be effective in a rapidly changing world must also be dynamic. They must keep pace with scientific advances. But in modern civilization, ethics, law and theology, which are conservative and static, have not adjusted themselves to the revolutionary progress of technology and the consequent changing factors conditioning our life. We therefore witness the tremendous collapse of 'morality' in politics and recurring crises in business. In the past, the only way of equalizing the geometric rate of evolution of the technological sciences with the arithmetic rate of evolution of the so-called social sciences has been periodically to accelerate social progress by violent jumps—non-peaceful advances which repeatedly brought the two abreast of each other. Thus the physical sciences give us peaceful continuous progress, while in the social field we find violent and periodic readjustments.

Korzybski's diagnosis is now familiar to all of us; yet its implications are quite different from what many suppose. According to Korzybski, in order to be sane, one must have a 'knowledge of' and be adjusted to, the world of non-verbal facts. Since man is primarily a symbol-using creature who communicates his knowledge from person to person, and from one generation to the next, through the use of language (mainly written and spoken words), the possibility of being sane rests upon a use of language which is similar in structure to that of the world around us.⁷ Since the only possible

⁵ Alfred Korzybski, *Manhood of Humanity*, p. 28.

⁶ *Ibid.*, p. 20.

⁷ Alfred Korzybski, *Science and Sanity*, p. 57.

link between the objective non-verbal world and the symbolic-linguistic world is to be found in structure, and structure alone,⁸ semantic disaster follows when we use and live by language different in structure from the structure of the world. But our traditional language does not give us this one-to-one correspondence between our symbolic world and the facts it supposedly represents, and accordingly we are inevitably led to believe things which are false-to-facts. Our higher order abstractions in the social, economic and political systems are not based on the facts, conditions, etc., created by the advances in science, engineering, and technology.

The difference between the insanity of a schizophrenic, who identifies his higher abstractions with those of a lower order, and the un-sanity of the larger mass of humans appears to be a matter of degrees. An individual cannot be considered entirely sane if he is wholly ignorant of scientific method and structural assumptions and so retains his primitive semantic reactions in our modern world. It is for this reason that preaching 'morality' to a fundamentally un-sane person is futile: he must first be semantically re-oriented. Since sanity is connected with the use of a correct-to-fact symbolism, our moral and ethical standards can rise only if we increase our sanity through an ever-expanding knowledge of science.

IV

There has been some misunderstanding of Korzybski's system at some points. The assertion, often repeated in *Science and Sanity*, that mathematics is the only language which has a structure similar to the structure of the physical world and of the human nervous system is one such statement susceptible of misinterpretation. Let us first examine this proposition in its application to the external physical world and then examine its application to the human nervous system.

This statement intends to convey the fact that an 'ideal' language such as mathematics must possess at least two characteristics, the power to (1) attain generality, i.e. handle cases involving higher order abstractions, and (2) retain its ability to apply to individual, concrete instances. We need to be able to note *similarities*, but we must also be able to take into account the *differences* that exist. In the most general form, this defines our problem as that of finding the invariant relations on which human understanding and agreement may be based—and this takes us directly to mathematics, for it is the model for the study of *invariance of relations under transformations*.

Some persons have supposed that Korzybskian semantics, stressing as it does the uniqueness of individuals, makes impossible any kind of science. This is a naïve misinterpretation. Korzybski emphasizes that every 'fact' of nature is unique and individual, but he also asserts that no science could exist with absolute individuals and with no relations.⁹ He also points out that no 'facts' are ever free from 'doctrines', and this certainly implies that we can't start with an indefinite number of unrelated brute facts.¹⁰ What Korzybski intends to stress is that the sequence of relations between lower and higher abstractions must be properly ordered. Inferences of a higher

⁸ *Ibid.*, p. 6.

⁹ Alfred Korzybski, *Science and Sanity*, p. 262.

¹⁰ *Ibid.*, p. 87.

order are not to be confused with descriptions, and descriptions of the macroscopic level of 'sense' data must not blind us to the dynamics on the sub-microscopic level of processes.

Not only does Korzybski recognize the need for higher order abstractions—he insists upon them as absolutely essential. Not only is it correct, as he points out, that theoretical, doctrinal, higher abstractions may have a stabilizing and regulating physiological effect on the functioning of our nervous system,¹¹ but anthropological studies show that the degree of 'culture' among primitive peoples can be measured by the orders of abstractions they have produced. There is an enormous economy, which facilitates communication and understanding, in being able to give brief statements which cover a wide number of individual cases.¹² It is this abstracting ability of human beings—seen at its best in man's formulation of mathematics—which differentiates men from animals. Man becomes the time-binding class of life because of the presence in him of a new factor, the capacity to collect all known experiences of different individuals, work out higher orders of abstractions, and convey the results of such knowledge from man to man through the expedient use of means of communication (types of symbolism). In brief, Korzybski's definition of man is non-elementalistic and functional, based on the observation that the human class of life differs from animals in the fact that each generation of humans, at least potentially, can start where the former generation left off. This is why man can build civilizations. And presumably it might also be added, when humanity perverts this time-binding function, man becomes the destroyer of civilizations.

This brings us to the all-important topic of time-binding in relation to the conjugate formulations of non-elementalism and non-linearity. Time-binding in the human organism is an expression of the general fact that the organism is *not* an algebraic sum of its parts, but is more than that and must be treated as an integrated whole. Bodily changes are frequently non-additive in character. For example, the superposition of new neurological processes on old ones is non-additive, for this may alter the character and functioning of the whole organism. Of course, the recognition that the notion of the organism-as-a-whole is central in biology and psychology came before Korzybski, but it is the merit of the Korzybskian system to have generalized this structural assumption into a fundamental principle of all science, and it should be noted that in his general semantics Korzybski explicitly includes the environment.

The manner in which this is attained is very interesting. Starting with the proposition that every fact of nature is a space-time event, it follows that the space-time continuum must be taken as the basis of organism-as-a-whole processes. Einstein first pointed out the importance of non-additive relations in physics in connection with his rejection of the familiar formula for the addition of vectors (compounding of velocities for light), but now Korzybski observes, what should have been evident anyway, that organic and social relations are also non-additive. Thus the world about us, no less than the world within us, turns out to be non-summative in its more fundamental aspects. The typical functioning of the human nervous system, which as we have repeated is time-binding in its functional organization, is not a plus (additive) affair, but is rep-

¹¹ *Ibid.*, p. 183.

¹² *Ibid.*, p. 377.

resented by an exponential function of time.¹³ 'Thought' also is a manifestation of the organism-as-a-whole-in-an-environment, and like all associative connections should be regarded as a non-additive affair. Thus we see why it is that our higher order abstractions ('thoughts', 'ideas', etc.) are, *when properly treated*, uniquely responsible for the fact that men are, or can be, time-binders.¹⁴

The phrase, 'when properly treated', is used advisedly. Our higher order abstractions are useful only when properly handled in terms of order. These abstractions reflect the 'cortical quest for invariance', and as such easily assume a static nature. But if we recall that *structure* is simply invariance of function and not any eternal and self-identical 'essence' or aristotelian substratum, we are semantically protected against mis-evaluations. The technique for translating the language of the static into the language of the dynamic, and conversely, is provided for in Korzybski's methodology. However, in a manner, we have already seen this procedure illustrated by those expositors of relativity theory who have been explaining to the public how time may be treated as a fourth co-ordinate of space through a transformation of three-dimensional dynamics into four-dimensional statics.

As the mathematician now uses the term *dimension*, it is no longer limited to what we call *space*. 'Dimension' refers to any manifold which we can order in some particular way. Manifolds or aggregates abound everywhere in our lives. 'Time' as used in physics is one such manifold, one of the variables involved in a problem of physics. When represented geometrically this time-manifold (or dimension) is represented by another axis in addition to the co-ordinates of the 'space' dimensions. But it is important to note that any of the 'spatial' co-ordinates can be treated as 'time' if we change our language from static to dynamic by raising the level or order one dimension. For example, as Korzybski points out, a vibrational motion in one-dimensional 'space' becomes a wave-line in two-dimensional space-time, and a flat circular orbit in two-dimensional 'space' becomes a helix in three-dimensional space-time.¹⁵

*The significance of this last illustration, showing how a dynamically circular motion becomes a static (stationary) cylindrical helix (or screw-line) in three-dimensional space-time, becomes particularly noteworthy when we recall that the equations of the circle and the spiral are non-linear, non-plus equations, and then connect this with the fact that "in the "spiral theory" we find the foundation for the stratification in levels or orders which is exemplified by the structure and function of the human nervous system."*¹⁶

In other words, if the human nervous system functioned as it ought, as a time-binding unity, instead of functioning as it ought not, through a 'copying' of the reactions of animals by responding to *symbol situations* with animalistic *signal reactions*, the activities of the human nervous system would be represented geometrically as a spiral or helix with the time co-ordinate designating the progressively higher levels of organization whereby the lower level abstractions are integrated into higher level system- or doctrinal functions. What we call 'philosophy' would then be such an all-

¹³ *Science and Sanity*, p. 354.

¹⁴ *Ibid.*, p. 638.

¹⁵ *Ibid.*, pp. 629, 645.

¹⁶ *Ibid.*, p. 181.

inclusive plan which orders all data according to a proper evaluation from the basic 'facts' to the highest 'implications' and 'meanings' (values) of human life.

Taken in a social setting, as indeed it must, since knowledge, communication and symbolism are the social framework of man's advance, general semantics will have to assist us in creating in society the institutions which can serve the same purpose in society which the central nervous system serves in the human individual. Just as the cerebro-spinal axis provides a 'mechanism' for the integrative actions of non-linear biological processes, so in society our political-economic institutions must provide the extra-neural matrix for the sharing of experiences, the transmission of knowledge, and the building up of a progressive civilization which moves forward in time toward higher integrations. We may say that the fabrication of such a level of social synthesis involves the creation of a world-sensorium—or a world-brain, to use the term proposed by H. G. Wells—provided we remember that a 'world sensorium' is a non-elementalistic and functional formulation.

This new civilization, an adult or non-aristotelian scientific period, as Korzybski calls it, will be the product of 'global planning', which is replacing the 'planal thinking' of the now disappearing aristotelian-euclidean-newtonian systems. Only when men have attained that level of scientific understanding and sanity can the growth-curve of social processes achieve the helix which is exemplified by the human nervous system when it functions properly. Biological evolution has already produced a 'wisdom of the body', which might well provide a model for emulation by our statesmen, politicians and educators, etc., in their stumbling efforts at producing a corresponding wisdom of society.

When man has finally mastered the science of curving the sweep of human history into the arc of the time-binding synthesis, he will then, at long last, have wrought into the fabric of his social being, not a dubious 'wave of the future', but a sanc and predictable social spiral of the coming age of human culture wherein the 'dignity of humanity' is a fact of general semantics and not a preachment of high idealism or foot-less theology.

This SECOND AMERICAN CONGRESS ON GENERAL SEMANTICS is in a large measure a tribute to the relentless insight and unremitting labor of one man. Let us therefore conclude this opening address with the simple pronouncement that Alfred Korzybski has done more than anyone else in our generation to bring into existence the methodological foundations for an adequate *science of man*, a science which in the darkness of our time gives us some hope for a brighter future for the children of this generation.

PREDICTION AS A REQUISITE OF ADJUSTMENT

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In any adjustive effort that has survival value the context of behavior is not restricted to either a 'subjective' phase or to an 'objective' phase of the situation. Human behavior has both internal and external phases and, strictly speaking, there exists no dichotomy representing either phase separate and categorical. However, in the case of strictly intensional and elementalistic orientations (as is pointed out by Alfred Korzybski in *Science and Sanity**) such a dichotomy occurs.

The character of our behavior and the 'meanings' (values) acquired by things within the *actual environment* or the 'objective' phase of a situation result from either intensional or extensional orientations. Our habits that involve objects (within social, physical and particularly verbal environments) determine to a great extent their 'meanings' and social significance. The only 'meaningful' bearing that anything has upon us, in the final analysis, is to be found in its *significant* effects upon us.

The 'logical' locus of any adjustive effort is to be found in the evaluations emerging as a result of problematic 'elements' within the situation. Problematic 'elements' can either be caused by, or result in, semantic disturbances which exhibit the lack of appropriate evaluation. Inappropriate evaluation sets a limitation on predictability, and therefore, endangers the possibility of adequate adjustment.

A delay in the consummation of a plan of action brings about a disjointed situation in which the total activity is carried over (symbolically) into the 'subjective' phase of the situation. This is brought about through an achievement restricted to human behavior which amounts to the arrest of passage and the establishment of a 'now'. This 'now' cannot be defined as an instantaneous existence but is merely the focus of a 'specious present' which possesses a 'past' and a 'future edge'.¹ This 'future edge' is a contingent phase of *any* situation. Both the 'past' and the 'future' are alive within this 'specious present' and only within this 'specious present'.

The delay of action with reference to an aim or end-in-view should bring about an implicit or symbolic dramatization of the total proposed activity. This implicit dramatization of a proposed activity consists of a phase of reflective behavior possessing an adjustive character. It is the dramatization of possible solutions in which we exclude those possibilities which do not seem applicable to the situation. The 'mind', through the agency of cortical selectivity and discrimination, evaluates the situation, and through 'rational' preference makes a choice among possible ways of bringing about the consummation of delayed activity or the resolution of problematic 'elements' within the situation into meaningful factors. Proper selectivity and discrimination is achieved through the cortical-delay of thalamic-controlled responses.

* *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

¹ *Specious present* is here used in the sense that C. I. Lewis and George Herbert Mead would 'define' it. Lewis in *Mind And The World-Order* (p. 58) defines the 'specious present' as '... fading into the past and growing into the future with no genuine boundaries.'

Through delayed reaction the neuro-psychic structures of our behavior patterns are permitted to re-form themselves into patterns of response relative to 'objective' frames of reference. Delayed reactions afford a conditioning of our responses and enhance predictability. Adjustive efforts that have survival value are flexible efforts that are characterized not only by reactions but also by delayed reactions.

We find that just any kind of proposed adjustment will not result in the solution of problematic 'elements' within the situation. Many people in an attempt to resolve problematic situations develop individual, and therefore, 'subjective' systems of semantics. Such systems are not susceptible to maximum communicative value and proper adjustments are endangered as there exists a lack of similarity between the 'meanings' which words acquire in such individualistic systems and the communicative social 'meanings' which are ascribed to them by society. An 'idea', in a sense, is a complex of symbols and this complex of symbols must possess a common social 'meaning' in order to afford communicative value which is essential in predictability. The lack of correlation between individual and social 'meanings' results in semantic confusions.

According to Korzybski, appropriate evaluation should be non-elementalistic, similar in structure to the world of facts and so afford prediction. A lack of structural similarity between the 'subjective' and 'objective' phases of any situation is detrimental to appropriate evaluation and, therefore, hampers prediction. The empirical verification of predictability is the test of evaluation.

The adjustment value of the estimation of future consequences of proposed activity is determined by the character of evaluation. But the practical function of evaluation is not to be found in predictability with reference to a remote future. It is rather to be found in the evaluation of present proposed activities. We evaluate various patterns of behavior through their tendencies to bring about certain consequences, but the area of maximum predictability lies in the 'future edge' of a 'specious present' and not in the remote future. According to Dewey the practical function of evaluation would be '... to ascertain the meaning of present activities and to secure, so far as possible, a present activity with a unified meaning'.² The 'meaning' of 'ideas' or statements are to be found in what they predict, therefore, 'meaning' has a future reference because that which we predict lies in the 'future edge' of a 'specious present' or within a remote future situation which of course possesses a highly contingent character.

Predictability depends upon evaluation and both predictability and evaluation depend on the similarity of structure between language, 'ideas' or statements and the 'world of facts'. The mere defining of words does not assure appropriate evaluations and predictability. Dr. D. L. Miller points out that

... to have significant meaning, words must refer to our native experience with factual, stubborn situations. We can define *black* such that nothing in the world is black. We can change formal meanings arbitrarily, but when one bumps his shins on a stone in the dark, definitions forsake him and he experiences a stubborn fact in its nativity.³

² John Dewey, *Human Nature and Conduct* (New York: Henry Holt and Co., 1922), p. 206.

³ David L. Miller, paper entitled 'Semantics' presented before the Social Science Club, University of Texas—unpublished.

For the achievement of maximum predictability a structural correlativity must exist between the actual environment and a language or 'ideas' having extensional structure. Extensional structure gives to an 'idea' the character of a pattern of action. An 'idea' as a pattern of action affords only an hypothetical means of removing a problematic situation. It is this hypothetical quality and not *certainty* that is characteristic of the 'idea'.

We are not here concerned with an analysis of the genesis and structure of 'ideas' *per se*, but rather we are concerned with the function of 'ideas' within the symbolic process with reference to evaluation and, therefore, prediction. Dewey says that the treatment of 'ideas' as copies of perceptions or 'impressions', as has been done in 'psychology' and epistemology since the time of Locke, ignores the anticipatory and prescriptive character of an 'idea'. The rôle and function of 'ideas' as plans of action involving a situation should be taken into account.

An 'idea' as a plan of action is first of all an anticipation of something. 'Ideas' of this character are anticipated consequences of what will happen when certain interactions and relationships take place within a selected portion of the environment. 'Ideas' having an extensional structure also possess a prescriptive character. They prescribe that certain results will follow if certain operations are performed with respect to, and under the supervision of, appropriate evaluations and observed conditions. Anticipation and prescription lend a predictive character to the situation in that it has a claim on future activity, i.e. activity within the 'future edge' of a 'specious present'. This predictive character of 'ideas' is not without a contingent aspect.

Anticipation amounts to the assumed structure of an activity being held in readiness; it is in a very real sense a preparedness to act with reference to distant experiences—distant in respect to spatio-temporal distance. An 'idea' as a plan of action not only anticipates that which is to be done, but it also anticipates something which is expected as a result of that which is done; a certain satisfactory consummation is anticipated also.

The basis of the predictive character of an 'idea' is found in the fact that 'ideas' possessing an extensional structure are, in a sense, implicit delayed responses which have a tendency toward actual overt activity. An 'idea' that affords extensional orientation is the implicit form of a total active situation. This implicit form, with reference to a significant situation of extensional orientation, is similar in structure with the factual world contained within the 'objective' phase of the situation.

Extensional orientation is an important condition of maximum predictability. To achieve extensional orientation one must develop linguistic patterns of extensional structure. Language can stimulate activity and the combining of words into various contexts is essential in the formulation of new aims, points-of-view or purposes which become effective conditions of behavior. Language, in fact, gives us the means of evaluation and is an agent of predictability.

Korzybski points out that linguistic patterns of intensional structure are basic to a language of vague generalities. Such vague generalities tend to produce misleading generalizations and ambiguous abstractions when abstracting is not consciously controlled. A language of generalities depends upon *similarities* and is highly productive of fictions; whereas, a language of extensional structure is highly productive of

implications of *differences*, selectivity and discrimination, and so is *similar* in structure to the world of facts. In this respect an important factor to be considered is *belief*.

Belief that has predictable value should result from appropriate evaluations and extensional orientations susceptible to empirical verifications. Doubt and worry emerging from indecision place limitations on predictability greater than the 'natural' limits of prediction. Appropriate evaluations should achieve a preparedness to act with respect to delayed symbolic reactions rather than undelayed signal reactions. Alexander Bain holds that a belief is *that upon which a man is prepared to act*.⁴ The fact that one is prepared to act does not necessarily express itself directly but it establishes within one's nature implicit and affective conditions of activity. These implicit and affective conditions of activity must be taken into account with reference to prediction.

In the consideration of a proposed activity we have a tendency to evaluate the consequences in the light of an hypothetical observer; this hypothetical observer being the existent social order or individual acquaintances within this social order. There is a tendency to look at ourselves from the standpoint of other individuals symbolizing certain social values. We, as socially self-conscious individuals, assume the attitudes of those within our social setting. This assuming of the attitudes of others takes place on the level of the imagination and is therefore susceptible to being carried beyond the limits of prediction. To see ourselves in future situations and to plan ahead involves the possibility of projection which is susceptible to the danger-point for sanity. Planning for situations beyond the possible controlling factors places limitations on prediction. I am not saying here that one should not plan ahead. Constructive imagination is instrumental in the dispelling of futility and despair and adds greatly to our sanity. What I am trying to emphasize is the *danger* of planning beyond the limits of prediction.

Basic to the extensional orientations are extensional methods based on thalamo-cortical integration. A flexible balance between thalamic 'feeling' and pre-frontal 'logic' is essential to appropriate adjustments. Much 'mental' confusion and mis-evaluation results from words carrying 'emotional connotations'. Such words tend to produce undelayed reactions or thalamic-signal reactions; whereas, words of a descriptive-report character lead to delayed reactions or cortical-symbolic reactions. Confusion often results from using a single intensional symbolic 'referent' to stand for several objective *de facto* 'referents'. The 'either-or' structure of our language which tends to the 'fallacy of extreme polarity'—the constant use of polar-words—and the confusion of descriptive with inferential terms, are barriers to extensional orientations and, therefore, a menace to maximum predictability.

⁴'Preparedness to act upon what we affirm is admitted on all hands to be the sole, the genuine, the unmistakable criterion of belief.'—Alexander Bain, *The Emotions And The Will* (p. 505). Peirce in 'How to Make Ideas Clear' says that belief '... involves the establishment in our nature of a rule of action ...'—in *Philosophy In America* [edited by Anderson and Fisch] (p. 458). According to Peirce, 'the essence of belief' is the establishment of habits of action or 'reflective' habits that determine action—a preparedness to act not merely with reference to a single circumstance but to a class of circumstances. The function of 'thought', therefore, is the production of habits of action. What a thing 'means', then, according to Peirce, is simply what habits it involves.

As a result of intensional orientation the 'mind' is susceptible to an impossible illusory world of its own creation. Korzybski points out that fixed and static 'ideas' resulting from the general character of intensional structure of orientations cannot deal adequately with the changing world of facts. Maximum flexibility and extensional structure of our orientations are necessary in our evaluations if we are to be prepared to deal adequately with changing frames of reference. A factor in the precipitation of many problematic 'elements' into a situation (resulting from inappropriate evaluations) is to be found in the intensional structure of our linguistic habits. Language-structure-function is an important issue in predictability.

Our predictions are not readily susceptible to empirical verifications if the structure of our linguistic habits are structurally dissimilar to the world of facts and to our nervous system. Proper and adequate adjustments occur with respect to the non-verbal world of facts; therefore, linguistic patterns must be extensional in structure in order to achieve adequate adjustments. Vague generalities afforded by intensional linguistic patterns do not implement proper adjustments. A language that is descriptively similar to the external world in structure and at the same time similar in structure to the functioning of the human nervous system is a language that is instrumental in prediction and, therefore, appropriate adjustments.

Korzybski points out that a disregard of *multiordinality* or orders of abstractions permits identification or the confusion of orders of abstraction and, therefore, involves inappropriate evaluation which results in semantic confusion and maladjustment. Consciousness of abstracting does not permit identification and is, therefore, a condition of appropriate evaluation based on non-identity or the differentiation between orders of abstraction.

Evaluation and predictability are, in a sense, correlative. Evaluation is not independent of conduct or 'human nature'—our standards of evaluation are conditioned and emerge with reference to our dealings with situations. These dealings with situations are conditioned by our habits or patterns of behavior which are in turn conditioned (but *not* determined) by the social context. Every act that is consciously performed has implicit within it a judgment of value. These judgments of value have implications for future activity. To have an end-in-view or aim is a characteristic of a well adjusted 'present' and a foreseeable end is a means to present action, if this foreseeable end is similar in structure to the facts. It is a condition which lends unity to activity and direction to perspectives. Out of our attitudes, habits, beliefs, and evaluations certain ends, objectives and purposes emerge which react upon our behavior and condition it. The type of conditioning would be determined by whether our evaluations and orientations are intensional or extensional in character.

In traditional 'thinking' the categories of final and efficient 'causation' have been thought of as being at variance and have been used in a discrete manner. These categories of ends and means through reinterpretation are, in fact, found to be correlative and must assume an organic character. Through present intelligent activity the foreseeable end and the adequate means of achieving that end must assume the status of correlativity.

In summary it stands to reason that prediction is an important requisite of adjustment for the simple reason that all adjustive efforts have a 'future reference'. All adjustive efforts take place within a 'specious present' possessing a 'future edge' and this 'future edge' is the locus of contingent factors which must be taken into account if proper adjustments are to be consummated. Prediction is essential in resolving problematic situations and is essential to the sanity of human beings. Ends, purposes, and goals would be futile and meaningless if prediction were not possible.

A MECHANISM OF CONFLICT AND PREJUDICE

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For some time there has been a growing concern about the effects and consequences of existing racial and social prejudices. It is not necessary to study the findings of our social psychologists, nor be familiar with the preachments of tolerance and good will to be aware of certain malignant influences in the speeches of Joe McWilliams, Charles Coughlin, and the nightly broadcasts from Berlin, in the Jim Crow cars, the real estate exclusion-covenants and the segregated schools for Negroes, in the carefully nurtured fraternity and sorority class distinctions, in the questions asked of job applicants, in the cruel tauntings of the playgrounds, in the pages of *Social Justice* and the *Völkischer Beobachter*.

There is much talk these days of the need for morale and unity in our war effort. Certainly, established disaffections do little to bring our hundred polyglot minorities closer together, do even less to provide a basis in action for democratic co-operation. The psychological strategy of the Nazis to *divide and rule* is all too apparent in their shortwave broadcasts to us. Their recent dissolvent propaganda has been directed

wherever there is a chance of cleavage: at the St. Lawrence, at the Mason-Dixon Line, at the Hudson River. And it is well known that anti-Semitic campaigns launched among us are not so much for the purpose of harming the Jews as to get the Gentiles fighting among themselves over the Jewish question.¹

Unfortunately, however, the immediacy and urgency of the problems created by such behavior are not apparent in the pages of the textbooks. There you will find only too little concern with ways and means of dissolving these destructive stigmata in the healthy functioning of human beings. Rather, they are treated as mere objects of study, something about which to write a chapter. And if anyone would seek guidance about means of preventing or reorienting such human responses, he must be content with something less than directly efficient procedures.

Nevertheless, it may be useful to begin in typical textbook fashion. Invariably, discussions begin with definitions. Here are a few:

[Prejudices may be considered as] any hasty judgment or opinion formed without due examination.²

... attitudes which result in gross oversimplifications of experience and in pre-judgments.³

¹ Gordon W. Allport, 'Liabilities and Assets in Civilian Morale,' *Defending America's Future, The Annals of the American Academy of Political and Social Science* (July, 1941), p. 90.

² W. F. Ogburn, 'Bias, Psychoanalysis, and the Subjective in Relation to the Social Sciences,' *Proceedings of the American Sociological Society*, XVII (1922), 62.

³ G. W. Allport, 'Attitudes,' *A Handbook of Social Psychology*, ed. by Carl Murchison (Worcester, Mass.: Clark University Press, 1935), p. 809.

Whenever a pre-existing attitude is so strong and inflexible that it seriously distorts perception and judgment, rendering them inappropriate to the demands of the objective situation, the social psychologist usually designates this tenacious attitude . . . a *prejudice*.⁴

One purpose is served by such statements. They help to make clear at the outset that we are in the realm of neuro-linguistic and neuro-semantic reactions. Involved in such reactions are our modes of interpreting, evaluating, and adjusting to the world outside and inside our skins. If prejudices had to do with weeding a garden, fixing the plumbing, or operating a seventy-five mm. gun, we should go to men adept in such direct experience for advice. But insofar as we deal with matters of human orientation to and evaluation of the worlds inside and around us, we can expect guidance from the methodology of general semantics.

Traditional studies usually go from definitions to a discussion of theories designed to account for the existence of patterns of prejudice. It is here that the literature is most vexing, because so many of the doctrines have served only to complicate and obscure the fundamental issues. Based on a now thoroughly discredited faculty and instinct psychology, these theories, none the less, continue today to find utterance, if only by implication. I refer here to the bundle of racist myths which first found assertion in Aristotle's *Politics*, where it is said that free men and slaves were different by 'nature' and as a result some peoples were destined to rule and others to serve. For Aristotle, racial conflicts were phenomena belonging to 'an eternal order of God or nature'. No social techniques known could bring about racial equality, and natural harmony could be achieved only if the lowly would accept and be resigned to the status which the eternal law imposed upon them. Group prejudices are thus conceived as fundamental human instincts, inherent in the biological structure of man.⁵

The aristotelian doctrine finds expression in the Racism of our time, in more 'modern' ways

of separating the sheep from the goats. The old parable in the New Testament separated mankind as individuals: on the one hand those who had done good and, on the other, those who had done evil. The new way divides them by hereditary bodily characteristics—shape of the head, skin color, nose form, hair texture, color of the eyes—and those who have certain hallmarks are known by these signs to be weaklings and incapable of civilization, and those with the opposite are the hope of the world.⁶

One could go on to list almost without end the variants on this theme which wind up in a

new Calvinism which asserts that one group has the stigmata of superiority and the other has those of inferiority. According to racism and nativism we know our enemies, not by their aggressions against us, not by their creed or language, not even by their possessing wealth we want to take, but by noting their hereditary anatomy and modes of response. For the leopard cannot change his spots and by these you know he is a leopard.⁷

⁴ *Ibid.*, p. 814.

⁵ *The Encyclopaedia of the Social Sciences*, XIII, 36.

⁶ Ruth Benedict, *Race: Science and Politics* (New York: Modern Age Books, 1940),

p. 5.

⁷ *Ibid.*

One can find the germs of these notions about the inevitability of human conflict somewhat glossed in William McDougall's 'discovery' of the existence of 'self-assertive propensities', i.e. innate urges to domineer and assert oneself over one's fellows.⁸ A carry-over of the theory of native pugnacity appears in Freud's analysis of the 'death instinct', which is sometimes popularly interpreted as the universal need of the psyche to express hostility against someone.⁹

It is easy, given these assumptions, to excuse the existence of race prejudice. The argument proceeds this way: Differences between people grow out of differing biological bases. This gives rise to differences in point of view which end by developing into antipathies. Therefore, prejudices arise from something innate.

It is unnecessary here to do more than recall first, the tremendous body of evidence which denies the existence of any biological basis for superiority. As Franz Boas says,

The only safe conclusion to be drawn is that careful tests reveal a marked dependence of mental reactions upon conditions of life and that all racial differences which have been established thus far are so much subject to outer circumstances that no proof can be given of innate racial differences.¹⁰

Second, such theories have been too often used to justify and rationalize the prejudices that already exist, which someone wants to exploit. And third, this approach to human relationships commits the logical fallacy of *begging the question*, for the theories take for granted the existence of the very phenomena they undertake to explain. One cannot accept the hypothesis of hereditary aggressiveness to explain prejudice while assuming the existence of the phenomena of aggressiveness at the same time. You would understand my naïveté if I were to say that my hair grows because of its hair-producing powers, but I should be just as silly if I said that prejudices occur because of prejudice-producing powers in our biological structures. The basic question still remains: How do prejudices come about?

Happily enough for us, the attack on the misguided 'nature' theories began a long time ago. The despised Sophists, Gorgias, Protagoras, *et al.*, in the face of Aristotle's dictum, had shown that human conventions and customs were sufficient to explain the hostilities between groups. They were able to point out that slavery was not something inevitable but that it had been established by force and maintained only by the threat of force. And it is in their wake that the great body of modern scholarship has moved. In describing the onset and existence of hostile attitudes and responses, abundant material is available to show the influence of the following:

1. Direct personal experiences and dramatic, traumatic situations. One remembers the story about Herr Goering's return to Berlin in 1918. As John Gunther tells it,

A socialist mob saw him in uniform and forcibly tore his officer's insignia from his coat lapels. Foaming with rage, he swore vengeance. His hatred of socialists, which is psychopathic in intensity, dates from that day. This incident is

⁸ William McDougall, *The Energies of Men* (New York: Charles Scribner's Sons, 1933), p. 98.

⁹ See Otto Klineberg, *Social Psychology* (New York: Henry Holt and Co., 1940), p. 379.

¹⁰ *Encyclopaedia of the Social Sciences*, XIII, 33.

important to Nazi History. It is not entirely fanciful to assume that much of the Brown Terror was directly motivated by this incident.¹¹

2. The ready acceptance of traditional and current opinions, stereotyped 'habits of thought' and ready-made attitudes of those with whom we come in contact.

The white child who has as yet no conviction of superiority is not slow in interpreting his parents' amusement at Mandy's gay new Easter hat or her use of a blond facepowder.¹²

Lasker found that the development of racial prejudices in children was not so much a matter of building up sentiments on the basis of concrete contact with the members of the race in question, but rather a matter of adopting the established values of the group. As Horowitz's material shows, the child's attitude toward the Negro is the result not of contact with Negroes but of contact with the prevailing attitude toward Negroes.¹³

3. The incidental factors in the education of the child, such as the story of the Crucifixion, the movies, the *Merchant of Venice*, etc., are sufficiently influential so that 'the social order itself conveys lessons that are absorbed without conscious learning'.¹⁴ Even the play-songs have been known to shape attitudes:

Red, white, and blue,
Your father is a Jew,
Your mother is a Japanese,
And so are you!

Ollie gozollie gozingo
The sheeny washed the window,
The window broke, the sheeny croaked,
Ollie gozollie gozingo.

4. The deliberate fostering of prejudices by every means at the disposal of interested parties, from outright forgeries to clearly designed efforts at indoctrination. In this connection the anti-Semitic campaign of Henry Ford's now defunct *Dearborn Independent* is well worth study.

5. The influence of economic factors, along with the competition for a livelihood bring with them manifestations of hostile responses.

As Dollard points out, there have been frequent cases of aggression against Negroes entirely as a consequence of their economic success, even when they are willing to 'keep their place'.¹⁵

Hovland and Sears computed the annual per acre value of cotton for 14 southern states for the years 1882 to 1930. The correlation between this index and the number of lynchings in these same 14 states was -.67, i.e. the aggression increased as the economic frustrations became more severe.¹⁶

6. Prejudice patterns are exploited whenever there arises a need to create feelings of national self-importance and whenever a scapegoat is needed to account for and to fix responsibility for hardships and calamities. As Benedict says,

We all know what the galling frictions are in the world today: nationalistic rivalries, desperate defense of the status quo by the haves, desperate attacks by

¹¹ John Gunther, *Inside Europe* (New York: Harper and Brothers, 1936), p. 64.

¹² G. W. Allport, *op. cit.*, p. 812.

¹³ Muzafer Sherif, *The Psychology of Social Norms* (New York: Harper and Brothers, 1936), p. 140.

¹⁴ B. Lasker, *Race Attitudes in Children* (New York: Henry Holt and Co., 1929), p. 102.

¹⁵ Quoted in Otto Klineberg, *op. cit.*, p. 392.

¹⁶ *Ibid.*, p. 394.

the have-nots, poverty, unemployment, and war. Desperate men easily seize upon some scapegoat to sacrifice to their unhappiness; it is a kind of magic by which they feel for the moment that they have laid the misery that has been tormenting them.¹⁷

7. Prejudices are to be found whenever they serve the interests of any governing group. Wherever the dominant sanctions of a society disapprove of the existence of prejudices, they tend to disappear. Thus, for example, in Soviet Russia, the disappearance of hostility toward minority groups was steadily evidenced. There is far more prejudice against the Negro in the United States than in Brazil, where race mixtures are commonly found. The attitude of Californians toward Orientals is quite different from the racial friendliness fostered in Hawaii. All of which suggests that some folkways and mores sometimes serve to affect human relationships without destructive prejudices.¹⁸

Such a list by no means exhausts the influences which make for inter-personal antipathies and group conflict. It is merely intended to indicate the significance of the rôle played by demonstrable neuro-linguistic and neuro-semantic factors. Such a statement of antecedent and accompanying conditions, moreover, has in it many implied ways of eliminating the harmful behavior. Unlike the fatalism and sense of futility produced by acceptance of the instinct theories, the recognition of cultural factors brings with it some hope for the elimination of the conditions. Exposés of the sources and the special interests of those who would inculcate feelings of hostility, the equalization of educational opportunities, any methods by which the economic roots of disaffection are removed—these will help prevent the antagonisms, the barbarisms, the degradation of human *time-binding* capacities.

And here a curious paradox asserts itself. There *has been* an ever-widening of our educational offerings. More people have been going to school than ever before. Germany's illiteracy index was the lowest in the world. Suffrage has been extended. We have done something to promote the equalization of economic opportunity. But how does it happen that these enlargements move so slowly? Why are efforts to expand the schools resisted so vigorously? How are the extension of programs of good will and religious toleration impeded? What makes it so difficult to get the economic reforms which might make competition more equitable? It is all very well for us to say that prejudices and social conflicts will be diminished the moment we straighten out our economic conditions, but how does one achieve the will to bring about that economic reform? And because progress in these areas has been slow, it is, perhaps, time for us to realize that the cultural disintegration in our time can be arrested only by a thorough-going re-orientation which gets to the heart of our existing modes of evaluation.

II

It does little good if we understand that semantic reactions, ready-made stereotypes, etc., are shaped by propaganda and personal experiences—without taking the next step to inquire into the evaluations of those affected. We ought to ask this

¹⁷ Ruth Benedict, *op. cit.*, pp. 237-238.

¹⁸ See Klineberg, *op. cit.*, pp. 396-397.

question: How much 'critical intelligence' is demonstrated when people are 'taken in' by such pressures? When men are immunized by ways of 'thinking' which make for good sense, then we need have no fear of the ravages of the poison and the spread of epidemics. If we limit our attack to the symptoms of social conflict, we are bound to discover new symptoms at every turn. We had better decide, before we are engulfed by the waves of the future barbarians, to direct our energies at more basic pursuits, at a wholesale re-organization of our ways of evaluating and talking. Measures short of this will leave us with the old problems in a new dress.

In the space of this paper I can indicate only a single starting point for such a fundamental re-evaluation, the ramifications of which go far beyond the areas of social conflict and the problem of prejudice.

I shall try to develop but one mechanism by which I trust we may come to understand why it must be eliminated from our responses if we would undercut the destructive hostilities. We may get to this most quickly by considering the widely-held conclusion that prejudices have their origin in a 'feeling of solidarity with those like oneself and an accompanying "dislike of the unlike."' ¹⁹

William Graham Sumner is the most frequently quoted exponent of this view. As he says,

Ethnocentrism is the technical name for this view of things in which one's group is the center of everything, and all others are scaled with reference to it. . . . Each group nourishes its own pride and vanity, boasts itself superior, exalts its own divinities, and looks with contempt at outsiders. Each group thinks its own folkways the only right ones, and if it observes that other groups have other ways, these excite its scorn.²⁰

Herskovits puts it this way:

We might say that prejudice is the malignant form which the predilection for our own mode of life may take, when this is expressed as an active distaste for behavior that is foreign to us.²¹

Hans Kohn writes in similar vein,

At the root of race prejudice is an aversion to strange appearances and ways of life which are often held to be proof of inferior standards.²²

These quotations seem to say that 'dislike of the unlike' is at the roots of prejudice. The serious tone in which these views are handed down conceals a tremendous danger. In the first place, we know enough about the rôle of suggestion to realize that 'a generally accepted account as to how the mind works can make the mind work that way'.²³ That is, when we say that a man has an 'aversion', or a 'natural antipathy' toward others as a part of his nervous functioning at the beginning, then it should

¹⁹ See Otto Klineberg, *op. cit.*, p. 374.

²⁰ W. G. Sumner, *The Folkways* (Boston: Ginn and Co., 1906), pp. 12-15.

²¹ Melville J. Herskovits, 'Training for Racial Bigotry,' *Developing Attitudes in Children*, Proceedings of the Mid-West Conference of the Chicago Association for Child Study and Parent Education, March, 1932. (Chicago: The University of Chicago Press, 1933), p. 82.

²² Hans Kohn, 'Race Conflicts,' *The Encyclopaedia of the Social Sciences*, XIII, 39.

²³ Kenneth Burke, *Permanence and Change* (New York: New Republic, Inc., 1935), p. 43.

not be surprising if people proceed to make it evident. If we insist that Johnny is a bad boy at heart, it will not be at all strange if Johnny moves to pattern his behavior in that image. If we start with the assumption that distaste for others is something in the nature of human existence, that very subtly encourages the further manifestation of the response itself. Nevertheless, we find all too frequently such assertions as this: 'This tendency to consider the own as the norm, the other, if not positively evil, as the deviation, is very deeply rooted in human nature.'²⁴ Now, if such aversions toward those who are different from us are 'very deeply rooted in human nature', then it is sheer folly to attempt to do away with the resulting prejudices—even though each of the writers quoted gives highly sophisticated advice for their removal. The moment one discovers that prejudices are derived from some inner predisposition, he should admit the futility of any effort, as he resigns himself to their inevitable effects. This, of course, seems to be the objective of the proponents of 'innate' theories. As John Stuart Mill says in measured words: 'Of all vulgar modes of escaping from the consideration of the effects of social and moral influences on the human mind, the most vulgar is that of attributing the diversities of conduct and character to inherent natural differences.'

There is a further consideration. Observe that the prejudice-patterns are 'explained' by the assumption of some hidden 'force' which determines their origin and sequence. But this simply substitutes one mystery for another. How explain the newly discovered 'force'? To ask this question is to reveal a tautology, for the one term serves no other function than to duplicate the other. It is as if we were to say that 'man laughs because he has a predilection for laughter,' or 'that he suffers pain because he has the faculty of suffering pain.' Similarly, to say that we have 'predilections for our own mode of life' is much like saying that we have 'predilections for prejudices'. And the moment that view is made explicit, a Nazi such as Alfred Rosenberg is given ample excuse for exploiting what exists anyway. And, furthermore, to assume the existence of such malignant predilections *a priori* is in no wise to demonstrate their existence, is not to prove them 'deeply rooted in human nature'.

Now, then, if these lines of argument are inadequate to describe the risks and distortions implied in the notion of 'natural aversions' between people, there is another more fundamental. Notice that it is said that responses of prejudice are the end products of prior tendencies to dislike people who are 'thought' to be different. That is, by definition, some people are said to be different, and so inevitably they become objects of antipathy. But I should like to turn this formulation upside-down and say that prejudices come about precisely when people are not conscious of *enough* differences. I shall want to urge you to see that the tragic consequences of our social hostilities follow not from the awareness that people are dissimilar, but from a *failure* to observe *enough* dissimilarities. I shall try to persuade you, in a proper Alice-through-the-Looking-Glass manner, that we discriminate against others exactly to the degree that we fail to discriminate between them. We dislike 'Negroes' and 'Jews', that is, because we see too few differences between them. And only when human responses are oriented to *differences as well as to similarities* will we begin to set aright some of the disordered modes of evaluation in our time.

²⁴ Gustav Ichheiser, 'Psychological Obstacles between Nations,' *The Journal of Abnormal and Social Psychology*, XXXVI (July, 1941), 430.

It is my point here that it is misleading to think of prejudices as responses towards those whose creeds, physical features, ways of life, etc., are different merely because they are different. For if that were true, we should not find what Horowitz, Moreno, and others have so clearly shown, namely, that children express no racial hostilities until they acquire the prevailing attitudes of their older friends and relatives. Children, as well as adults, *learn* their aversions and prejudices in and from the neuro-linguistic and neuro-semantic environment with which they come in contact. And it is in *what* is learned, and in the subsequent behavior, that we will find the mis-evaluations that lead to the rupture of human relationships. It is in the very failure to be conscious of enough differences that we will discover the lack of critical intelligence and how to deal with it.

May I give some examples. The first is a woman's written confession:

My early childhood . . . was spent in a suburban district of the city of Chicago, and in this place there lived but one family of Jews. This family consisted of Mr. and Mrs. B., and their son Henry. As we were neighbors Henry and I used to play together until one fatal day. While playing house I happened to break one of Mrs. B.'s white milk pitchers, for which Henry admonished me and frightened me terribly. . . . From that day I never played with Henry again, for I both hated him and at the same time was afraid of him . . . Since my childhood days I have had many pleasant dealings with Jews and Jewesses. Yet when one mentions the name 'Jew' I am liable to grow very angry or condemn the Jewish race in a terrible manner, for then . . . the recollection of my childhood experience comes to mind.²⁵

Notice that she ended by hating not only Henry B. (who alone hurt her), but 'Jews'—a verbal fiction, because in life there exist only unique individuals, each different from the other. She, however, lumped them all together, disregarding the differences and focussing exclusively on the respects in which they are alike. Tragic, indeed, is it that she does not see the 'unlikeness', that she has only a 'consciousness of kind'. But what would constitute 'good sense'? As Korzybski puts it, she should *allocate* her response, she should hate Henry B. (at a date). Then, aware that there exist Individual₁, Individual₂, Individual₃, etc., she should respond to each as she meets and deals with each, and not in terms of fictional fantasms born in the similarity-breeding term *Jews*.

Here is the example of a woman who had no experience with live human beings, but only with vibrations in the air and marks on a screen:

When I was quite young my mother read me the story of *Oliver Twist*. I remember quite plainly how angry I became when I learned the full extent of Fagin's operations as affecting Oliver. There was also a picture of the old Jew, showing him in all the horror imaginable—stooped, filthy, ragged, sly, sneaking, all the worst possible traits. Then I saw a few years ago Lon Chaney play the part on the screen. This performance capped the climax. Since then I have looked upon most Jews with somewhat of aversion.²⁶

What is the woman doing? Carrying her aversion to single fictional characters over to other human beings, each of whom, being different, should be indexed and responded to differently. Nothing less than a complete re-orientation, which would keep

²⁵ Robert L. Duffus, 'Where Do We Get Our Prejudices?' *Harper's*, September, 1926, pp. 503-508.

²⁶ *Ibid.*

her gaze on the unique, different facts of experience, could root out her pathological prejudice.

An ultimate in such indiscriminate identification I find in the order of Ernest Schreyer, the First Vice-Mayor of Koenigsdorf, Germany: 'Cows and cattle which were bought from Jews directly or indirectly may not be bred with the community bull.'

So characteristic and canalized can the habit of going by similarities become that you must have come somewhere upon the counterpart of the following story:

My grandfather was a man who had three convictions, three first-class hatreds. He hated Democrats, he hated liquor in all its forms, and he hated Catholics. One afternoon in the Boston paper there was a story about a big fire. A Presbyterian church had burned to the ground . . . the cause of the fire was not known. I can remember yet my grandfather pounding the table to emphasize his words. The old gentleman said in measured syllables: 'Let me tell you that when they discover the cause of that fire, they'll find that the person who did it was a low, dirty, sneaking rum-drinking Catholic Democrat.'²⁷

The vast number of studies of stereotypes, those generalized pictures in our heads, reveal very clearly how customary is 'thinking' in non-indexed terms, without a consciousness that each human being is not identical with his neighbor, even though we talk and act as if he were. Katz and Braly found their subjects picturing

the Germans . . . as predominantly scientific, industrious, and stolid; the Negroes as superstitious, lazy, happy-go-lucky; the Irish as pugnacious, quick-tempered, and witty; the English as sportsmanlike, intelligent, and conventional; the Italians as artistic, impulsive, and passionate; the Jews as shrewd, mercenary, and industrious; Americans as industrious, intelligent, and materialistic; Chinese as superstitious, sly, and conservative; Turks as cruel and very religious.²⁸

Now, it should be clear that here there is little evidence of what can be easily verified: that there are no 'Turks' to be found anywhere, but only Abdul₁, Abdul₂, Abdul₃, etc., unique individuals, and that so long as one 'thinks' in terms of the data of the life-facts, the harsh, intemperate group-prejudices, so aided by similarity-talking, will be little encouraged. It has been well said that 'Whoever starts talking or writing about "the Jews", has himself, consciously or unconsciously, caught the deadly virus of anti-Semitism.'²⁹

A by-product, of no uncertain value, that results from the acquisition of the habit of indexing is a noticeable willingness to go to and by the life-facts in other areas of one's talking. When we have been able to show students that talking in everyday terms moves them away from what is to be found in life, it is an easy matter to show them the necessity of being oriented extensionally elsewhere. In this connection, La-Piere, studying the antipathy to Armenian immigrants in Fresno County, California, reported as follows:

It was alleged . . . that the Armenians are 'dishonest, lying, deceitful,' but the records of the Merchants' Association give them as good a credit rating on the

²⁷ C. R. Miller, *How to Detect and Analyze Propaganda* (New York: Town Hall, 1939), p. 12.

²⁸ As summarized by G. W. Allport, *Attitudes*, p. 816.

²⁹ *The New Republic*, July 21, 1941, p. 70.

average as Americans. The Armenians were described as 'parasitic', but they apply much more rarely for charity to the County Welfare Bureau. They were also said to have an inferior code of social morality and to show frequent cases of social friction, yet they appear in fewer legal cases than their numbers would lead one to expect.³⁰

Such persistently held prejudices would be impossible in people trained to observe what goes on in life.

In short, once we have inculcated the notion of the *differences* to be found if only one will look, we begin to reveal the character of the neuro-semantic soil in which prejudices are nourished, the

Intensional orientations . . . based on verbal definitions, associations, etc., largely disregarding observations as if they would involve a 'principle' to 'talk first and never mind life facts'.³¹

We will then be ready for what Korzybski calls 'the method of sanity', the

Extensional orientations . . . based on ordering observations, investigations, etc., first, and the verbalizations next in importance.³²

What is said here about the value of seeing differences as well as similarities, and of the necessity of indexing is easy to say, but hard to achieve.³³ The techniques of existing educational procedures generate habits of talking in mass and class terms. And when one is so oriented, it takes much training, much study, and much exercise to do otherwise. But it can be done. Preliminary classroom findings which I can mention only in passing provide some evidence. The results of one experience are most encouraging. Fourteen undergraduates, whose prejudices were revealed by interviews and the Bogardus Social Distance Scale, voluntarily submitted to training in extensional methods for sixty hours over a four months' period. The resulting shifts in response, as shown in their willingness to work with those of the 'out group', to participate in campaigns of social work, to re-examine their stands on other issues, is almost 'too good' to reveal here. And from all available indications their new reactions promise not to be temporary. A most interesting by-product of this particular study is the fact that the five students with lowest grade averages responded more quickly and more completely. The three students with highest grade averages resisted re-training for much longer periods. Their eagerness to verbalize seemed to affect their willingness to be oriented by the facts of direct experience. More significant (for this writer) than anything else found in this study is the beginning of a conviction that we cannot solve the problems of group prejudice by *didactic preaching*. A control group was exposed to readings and lectures on the baneful effects of prejudices and the

³⁰ R. T. LaPiere, 'Type-Rationalizations of Group Antipathy,' *Social Forces*, 1936, pp. 232-237, summarized in O. Klineberg, *op. cit.*, pp. 386-387.

³¹ Alfred Korzybski, 'An Outline of General Semantics,' reprinted in *General Semantics: Papers from the First American Congress for General Semantics and Other Related Contributions*, collected and arranged by Hansell Baugh (New York: Arrow Editions, 1938), p. 1.

³² *Ibid.*

³³ See Alfred Korzybski, *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941), pp. 166, 381, 514, 517.

necessity for tolerance and good will. But somehow, this did not take. They agreed verbally and then proceeded to do otherwise. These students were talked to but never given methods, devices, ways of evaluating which they could use and apply generally. They were reminiscent of the story

told of a group of children in a church school who had been studying the Negro, his history and his contributions to American life. At the conclusion of the period the teacher asked a 15-year-old girl who was a member of the class to lead in prayer. She thanked God for the contributions of the Negro, enumerating them in some detail, and then concluded, "Teach us to be tolerant and to keep the Negro in his place."³⁴

The simple expedient of indexing, which the fourteen trained students learned, left them armed with a weapon which cut through the verbiage and their confusion.

It should be unnecessary here to say that the mechanism of being generally aware of *differences and similarities*, by using indexes, dates, etc., exhausts by no means the tools in the workshop of general semantics. It, indeed, seems but one of dozens. But if so much seems possible from so little, one may be pardoned his enthusiasm for a system whose application in our world can only bring hope, where now there is so much tragedy.

³⁴ B. Lasker, *Race Attitudes in Children*, p. 4. Quoted in Otto Klineberg, op. cit., p. 398.

ETHICS OF TIME-BINDING

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Popular orthodoxy about 'human nature' for the past hundred years has, by virtue of a naïve, elementalistic 'materialism', defined man as a 'selfish animal', engaged in a struggle in which the 'fittest' survive. Had society been differently constituted at the time this definition gained its wide currency, 'fittest' might not have been defined as it was. We might, for example, have pointed to the timidity and speed of the deer, and defined fitness to survive as superior rapidity in running away from our enemies; we might have pointed to the earthworm or the mole, and defined it as the ability to keep out of sight and out of the way; we might have pointed to the guinea pig or the oyster, and defined it as the power to propagate our kind faster than our enemies could eat us up. As it turned out, however, we pointed to the cunning of the ape and the ferocity of the tiger, and defined fitness to survive as the possession of such qualities as characterize the more spectacular beasts of prey. Philosophers dreaming of an *Übermensch*, financiers worshipping their 'titans of business', and the populace cheering their gladiators—alike taking pleasure in the resemblance of the more prominent of their fellow men to the least pleasant members of the animal kingdom—felt that in the phrase 'survival of the fittest' they had found scientific sanction for their most predatory inclinations.

It is entertaining and not altogether uninteresting to speculate on what our ideals would have been had we defined 'fitness to survive' in other ways: if instead of beasts of prey, we had chosen other animals for our models. Emulating pigs has been, of course, one such ideal energetically pursued since time immemorial, although rarely with full social approval. It will be remembered that in the *Odyssey* Circe gave ingenious and practical encouragement to those who had inclinations in this direction; Homer, however, did not appear to approve of the results. In Aldous Huxley's *Brave New World* we have the picture of a non-human world such as would be designed for us by those who would have us emulate the social ants. The world, under the management of a super-brain-trust, is as well-integrated, smooth, and efficient as an ant-colony, and, as Huxley eloquently shows, just about as meaningless. I am not aware that anyone has yet suggested emulating the guinea pig in order to survive by sheer force of procreation: it would seem that here is a wide open field for people interested in developing other sub-human systems of conduct.

I do not mean to be as frivolous as I may sound. It cannot be too sharply emphasized that any talk about human 'survival of the fittest' that ignores the distinctive mechanism, not shared by other creatures, by which man survives, falls inevitably into the error of interpreting the term *fittest* in an animal, rather than human, sense. If we leave unexamined what we mean by 'fitness to survive', there is no limit to the sub-human systems that can be devised: we can emulate lobsters, dogs, sparrows, parakeets, giraffes, opossums, or skunks, because they have all obviously survived in one way or another. All such systems, including our present dog-eat-dog economic system,

would have one fundamental weakness in common—that of lacking, as Korzybski would say, a dimension. A solid may in some respects have the characteristics of a plane, but it cannot be dealt with in a two-dimensional, plane geometry. Similarly, although a human being in some respects resembles animals, he cannot be dealt with purely by means of zoological analogies. Man has an extra dimension.

This extra dimension not shared by animals is, of course, what we are accustomed to calling the 'higher', 'intellectual', or 'spiritual', 'faculties' of man. 'Philosophy' through the centuries has been hung up on the dilemma of attributing this 'spiritual' aspect of man to *super-natural* origin, and thereby relinquishing all claim to being able to affect it by other than magical means, or of denying its existence altogether against the evidence of inner conviction to the contrary. Korzybski's contribution to the solution of this ancient 'philosophical' problem develops out of facts familiar to every student of linguistics. Linguistics has pointed out, in contrasting the signalling systems of animals with the language systems of human beings, the fact that the principal feature of the latter is the enormously greater precision of interaction and co-operation obtainable among individuals within the species. When, as Bloomfield observes in *Language*, 'we tell someone, for instance, the address of a house he has never seen, we are doing something which no animal can do.' Language is at once the product of human society and that which makes society possible. Korzybski calls attention to the fact that human beings, able to give precision to their reports and instructions, able to relay them over long periods of time, both orally and in writing, are able to increase their control over their environments from generation to generation. With this mechanism of language, we can accumulate knowledge over centuries and guide our present actions in the light of a past as far back as tradition or historical research can discover; we can also direct our efforts toward a future as distant as our imaginations can envisage. *Time*, says Korzybski, is the human dimension. Animals have no history beyond their own memories, no future beyond a day or a season. Man, however, is the *time-binder*.

Korzybski says a good deal in *Science and Sanity* about the importance of terms. No better illustration of their importance can be found than this term, *time-binding*. 'Mind', 'intellect', 'spirit', 'idealism', 'imagination', 'insight', 'inventiveness', 'vision', 'foresight', etc.—all which we, in intuitive acknowledgment of their importance, have called the 'higher faculties' are embraced in this term, which gives at once a functional description of the mechanism of human survival and a prescription as to how that mechanism should operate. Without, for instance, the knowledge that we have of agriculture accumulated over time by means of our symbolic apparatus, the human race could not even feed itself. Man's tools, his machines, his textiles, his shelter, his social organizations, are alike products of cumulative endeavor: organized co-operation between the living and the dead. The prescriptive implications of time-binding arise inevitably out of the description: the greater the area of co-operation between the living and the dead in the interests of those yet unborn, the better; the more people embraced in the co-operative enterprise, the better. For this we have the testimony of history, which shows that practically every great civilization is the result of the interplay of two or more primitive cultures; we have, too, the recent testimony of science, which shows that the freer the interchange of information, the more rapid the progress.

The logical outcome of time-binding, generally acknowledged as the characteristic mechanism of human survival, would be, as Korzybski says in the *Manhood of Humanity*, complete co-operation the world over, complete freedom in the interchange of information, a minimum waste of effort through the duplication of scientific or industrial effort, the maximum employment of our means of communication. In such a world no human group would be completely isolated from the products of the time-binding energies of the rest of the human race; and no group would be unable to contribute, in whatever small way, to the great human store of knowledge and experience which lies at the disposal of all.

Let us examine again the machinery by which time-binding operates. Mainly it operates through the use of symbols—language. We have learnt the principle that there is no necessary connection between a symbol and that which is symbolized. The importance of this principle can hardly be exaggerated. The flexibility of the map-territory relationship means that a territory can be mapped in many ways, and that no map says all about the territory. This principle, sufficiently disseminated, would demolish for once and all the dogmatists at all levels of private and public discussion who, ignorant of the characteristics left out in any verbal formulation, know 'all about' this and 'all about' that. Furthermore, this principle relegates into limbo with the voodoomen and the witch-doctors those 'thinkers' and 'philosophers' who, unaffected either by scientific orientations since Einstein or by modern linguistic research in languages outside the Indo-European family, rejoice in the blissful conviction that their verbal categories and associational patterns—the outcome of their habituation in three or four dialects of Indo-European—are 'universal laws of thought' adequate to represent a dynamic universe.

Maps can also be made that have no territory to correspond to them: these may be made in error, or they may be outright lies. But also, maps can consciously be made of territories that do not exist in order that we may, by keeping these maps before us, bring corresponding territories into existence. Such 'blueprinting' of the future could not be done if maps were not independent of the territories they stand for. That is to say, we could not set up for ourselves what we call 'plans', 'aspirations', 'ideals', or 'goals' without these maps of territories-to-be. The same freedom and flexibility of our symbolic systems that make lies and mistakes possible also make ideals possible. One of the basic reasons that human beings can think in terms of distant futures, as well as in terms of the distant past (maps of territories that no longer exist) is the independence of the symbol from that which is symbolized. To a dog, the expression *hamburger today* is meaningful, if you produce the hamburger; but *hamburger tomorrow* is a totally meaningless noise. What better evidence is there of the animalistic character of some of the activities of our profit system than the fact that the exploiters of our natural resources, for instance, responded all too readily to the words *profits today*, but acted as if there were no meaning whatever in the words *devastation tomorrow*? (The *profits today* boys are still at it—acting as if the words *the triumph of Nazism tomorrow* were again a meaningless noise.)

What shall we say, then, from the time-binding point of view, of a politico-economic mess such as we live in at the present? A system in which an animalistically interpreted 'survival of the fittest' is regarded as a fundamental premise? A system

in which, therefore, as Thorstein Veblen pointed out, predation by violence or by fraud is an accepted and entirely respectable method of getting along in the world, both for individuals and nations? A system in which the destruction of goods and the withholding of productive energies are engaged in as a matter of course, in spite of malnutrition and need among millions? A system in which, the liberating influences of capitalism having all but ceased to operate, international cartels, nations, smaller business associations, and even labor leaders, taking advantage of the necessary interdependence of human beings in an industrialized world, have sought to create scarcities, to throttle competing goods and services, and to erect what Thurman Arnold has called 'economic toll-bridges' in order that the few might profit at the expense of the many? A system that creates, as a result of its very structure, cleavages and hostilities between individuals and groups, the result of a universal fear that if we do not take economic advantage of others, others will take advantage of us? A system that is compelled to undergo periodic upheaval and collapse: strikes, panics, depressions, wars, and revolutions, because the institutions it creates are *structurally at variance* with the way in which human time-binding energies operate? A system that is now compelling half the peoples on earth to employ their talents, not to promote further time-binding, but to subjugate and destroy the peoples of neighboring nations with whom they should be pooling their intellectual and material resources toward the co-operative solution of their problems? On what can we build our convictions in fighting against this worse than savage state of affairs?

It is my belief that society can ultimately be reorganized in a way consistent with man's time-binding nature. It is also my belief that the principles upon which such reorganization can be based are already in existence and familiar to everyone—namely, the principles of democracy. Democracy, thoroughly developed and energetically carried forward in the main areas of human life, would be a form of social organization entirely consonant with the fullest realization of man's time-binding energies. Democracy, in other words, refusing to define human beings as 'selfish animals' clawing each other for 'survival', refusing to define them as sheep or cattle, to be herded around by 'supermen', insists upon treating human beings as human beings. To illustrate specifically, what is freedom of speech but the political recognition of Korzybski's principle that no statement ever says *all* about anything, and that more remains to be said about every problem? Freedom of speech also recognizes that in order that we may make fullest use of our powers of communication, the basic instruments of time-binding, we must always permit even the humblest of people to speak freely, for they may have something to say that is important for us all to know. Universal education, another democratic principle, is the recognition of another principle of time-binding, eloquently developed by Korzybski in the *Manhood of Humanity*: namely, that the accumulated product of our time-binding energies—the science and wisdom of the world, are not the property of a few, but the right of all. The democratic doctrine of racial equality is but another way of saying that all human beings share, in greater or less degree, the requisite type of nervous system that makes possible the symbolic process, and therefore makes them all potentially able to share in the co-operative process of governing our destinies through the pooling of knowledge. The democratic doctrine of religious neutrality is tacit recognition of the fact that questions about 'God' and the

'Hereafter', being incapable of solution in ways that can be agreed upon to the satisfactions of Christians, Buddhists, Mohammedans, and Jews alike, had best be left to individual discretion and not be permitted to stand in the way of practical agreements about things that need to be done for the general weal. Authoritarianism, going on the principle that most men are cattle, secures social control first by force, and secondly—and here authoritarianism pays unconscious tribute to the intelligence of all men—by cutting off the time-binding process, that is, by cutting off communications by means of censorship or the denial of education to the masses. Democracy, on the other hand, secures social control by mutual agreement, arrived at through our use of that distinctive human instrument, language.

In so far, however, as our semantic reaction systems are still crippled by superstitions, by dogmas, by identifications, by confusion of levels of abstraction, and by the habitual ignoring of contexts—in other words, in so far as we remain pathologically susceptible to slogans, shibboleths, and 'headline thinking', our democratic processes of free discussion and free exchange of 'fact' and 'opinion' will do us little good. So long as we condemn, on the basis of *signal reactions*, all plans called 'New Deal proposals', all candidates called 'Republicans', all schemes to which anyone applies the label 'Socialist', all people to whom such words as 'Jew', 'Catholic', or 'labor leader', or 'capitalist', etc., can be applied—so long as such automatic responses remain embedded in our nervous systems, our democratic practices of discussion and debate will be blocked and rendered futile. In so far as we are so lacking in imagination, that is, so attached to our customary symbolic representations, that we cannot think of economic problems except as 'economic problems', of religious problems except as 'religious problems', of crime except as 'crime', of relief except as 'relief', etc., we can never escape the vicious circles we verbally create for ourselves that render progress impossible. Instead of arriving at agreements, we become involved in nonsense arguments, quarrels, and bitterness that tend ultimately to cast doubt upon the democratic process itself.

He who studies, teaches, and applies general semantics, then, by revealing some of the fundamental mechanisms of disagreement, doubt, quarrels, and frustration, by understanding those facts about human language and the human nervous system that force the uncertain relationships between words and things deeply into his consciousness, by conveying a sense of the possibilities that are open to the human race through the overthrow of the 'tyranny of words' and the tyranny of mis-educated semantic functionings, is doing more than contributing to the education, adjustment, and well-being of the small group of students, friends, or colleagues who may come under his influence. He is helping to make possible the conditions under which not democracy alone, but civilization, can survive.

THE LEXICOGRAPHER AND GENERAL SEMANTICS

WITH A PLAN FOR 'A SEMANTIC GUIDE TO CURRENT ENGLISH'

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A clarification of issues results from the description of a science in extensional terms. As Korzybski says, "The situation [causing delusional evaluation] is radically changed when we use actional or functional language, when we describe what a physicist does when he finds his "length" or "second" or any other entity he is interested in."¹ When we apply this type of approach to the work of the lexicographer, the description is that he collects contexts in which certain words are found, and compares them for similarities and dissimilarities. He finds certain relational features to be present in some contexts, by contrast to contexts where they are absent or different. As a linguist, Dr. Zellig S. Harris, has recently observed:

The meaning of a linguistic form may best be defined as the range of situations in which that form occurs, or more exactly, it is the features common to all the situations in which the form occurs and excluded from all those in which it does not. This furnishes a test which, though impossible in practice, is at least conceivable. In practice, we use approximations to this: the meaning of a form class is the contrast between its positions and combinations and those of the other form classes; the meaning of individual morphemes is approximated by contrasting the situations in which they occur in an utterance with the situations in which the same utterances occur without them, and so on.²

By recording these features of relation, which are covered by the term *meaning*, a lexicographer produces his dictionary.

Each time that a word is used in any particular context, that instance is unique, having a variation of values from every other particular context. The similarities may be sufficiently great so that the responses entailed by associations in previous contexts will permit reasonable communication;³ but dissimilarities are also invariably present,⁴ and the recognition of these should ensure a conditional response, and hence 'intelligent' consideration of whatever problem is in hand. Dissimilarities are present because precisely the same characteristics will not be abstracted in the recognition of an 'object' by any two observers, or even by one observer on successive occasions.

¹ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941), p. 639.

² Review of Louis H. Gray, *Foundations of Language* (New York, 1939), in *Language*, XVI (July-Sept., 1940), 227.

³ The binding of contexts is achieved by neurological mechanisms: when a response to a word-form has once passed along a certain nerve 'channel', a response to that word-form in another context tends to follow the same 'channel'.

⁴ As Leonard Bloomfield states in his *Language* (New York: Henry Holt and Co., 1933), p. 407: 'one could say that every utterance of a speech-form involves a minute semantic innovation.'

Even on a simple level, any two people will abstract a different set of features to be covered by a word; and when these sets of features can be markedly contrasted, it may be said that the varying contexts cause a series of levels of abstraction. If the user of a word is not conscious of the shift in levels of abstraction, he sets up a barrier against what would otherwise be the appropriate response. As an example of such a blockage, we may take the word *bankruptcy*, which causes difficulties among many economists and most people in general. It appears regularly on a descriptive level, when it is used to represent the legal requirement set down in statute books or the conventions observed in personal relations; but such a statement as 'The nation will be faced with bankruptcy' brings this word that commonly represents a lower level of abstraction into a context where a higher level of abstraction is necessary. A nation with the working power of 130 million people and the resources of a rich continent could never be 'bankrupt' in the same sense as an individual who had contravened the regulations of the banking laws. Either the word *bankruptcy* should be limited in usage to the lower level of abstraction, or else appropriate (and very different) responses should be brought into play when the word is used in the context of the higher order of abstractions. Since there can be no means of restricting the usage of a word to particular contexts (apart from a scientist's *ipse dixit* in controlled frames of reference, at their best in mathematics), the solution lies in training people to be on their guard for these shifts in levels of abstraction. A person trained in general consciousness of abstracting by the techniques of general semantics would be prepared to spot such shifts, and his responses would be *delayed* and so become appropriate to the fresh context.

It would be of great service if a dictionary could make explicit for such troublesome words a series of these varying contexts. To this end I have under way a work to be called *A Semantic Guide to Current English*. The chief purpose will be to aid in eliminating such semantic blockages. The emphasis on contexts, which can be extended in an indefinite series, rather than on definitions, purporting to be all-inclusive, furnishes a basis for flexibility of semantic reactions, and for freeing a speaker from fixed responses on an infantile level. The phrase 'extensional definition' may pass in colloquial discourse, but a degree of contradiction is involved. It might be wise not to attempt to 'define' an everyday term at all, but instead to 'describe' it. The word *description* implies less of an aristotelian assumption. This description will consist of a listing of examples or a charting of the contexts in which the word is customarily found at some particular time among particular groups of people.

From the genetic point of view definitions are not necessary, as a child learns a language by experience with a long series of life contexts, not usually defined, but made significant by the factual consequences.⁵ There must be undefined terms standing for first order experiences.

An untrained person, in consulting a dictionary, assumes that the relation between

⁵ We must in some way break into the circle of an accepted system of communication. This 'breaking in' occurs in childhood by the trial and error method. The refinements of mathematics have to be made from the original basis of everyday language, and for this reason mathematizing does not have autonomy, but must always remain, no matter how refined, a derivative of ordinary language, and hence liable, though in progressively smaller degrees, to its errors.

the term and the definition is one of static equivalence, and this supplied 'is' of identity leads to the creation of 'entities'. Accredited lexicographers will rightly register the objection that the user of a dictionary should interpret the relationship by saying 'This term represents so-and-so,' for 'represents' indicates the true relationship; but the damage is done for people in general. The conventional dictionary definitions are mere circumlocutions—when they delusively establish the sense of identity, they yield no 'knowledge' (i.e. information on structure or relationships). The proposed *Guide* will dispense with the tacit 'is'-of-identity definitions, by using informal statements about the word as a word—e.g. 'This word appears in contexts which (etc.),' or 'The range of situations in which this word does service,' or 'This term is classified among (etc.),' etc.

The purity of abstraction that gives mathematics its relative freedom is not possible in everyday speech, for non-distinctive bits of previous contexts are remembered as the word-forms are used again, and this prevents a clear-cut abstraction. Even though the abstraction will not have a one to one correspondence, the consciousness of the process involved will give the benefits outlined by Korzybski.

It is important to discriminate between the process of abstracting on the one hand (a valid and inevitable procedure), and the belief that there are 'entities' which correspond to the abstract terms on the other hand (a delusory and un-sane procedure). If linguists are to be scientific, they are forced to deal with something tangible and measurable; but nevertheless most of them have contented themselves with an objectified 'thought'.⁶ The following statement by a reputable professor of language at a Middle Western university illustrates notably this objectification of 'thought': '... revelation of a thought,' he says, 'is comparable to the revelation of a horse at night by passing the continuous ray of a lantern along his body.'⁷ An understanding of the abstracting process will be fortified by sets of contexts such as the proposed *Guide* will provide.⁸

Practitioners of 'historical semantics' have felt it necessary to distinguish between 'essential meaning', 'central meaning', or *Hauptbedeutung* on the one hand and 'applied meaning' or *Nebensinn* on the other.⁹ But one is on treacherous ground in saying that a certain meaning is more 'central' than another, for at most one could merely establish

⁶ This is the chief reason, I suspect, why students of linguistics have played a very minor rôle in the development of general semantics. Furthermore, they regard 'semantics' as a small division of their field of learning, and have not awakened to the fact that 'general semantics', as formulated by Korzybski, refers to a larger co-ordinating system in which linguistics and other empirical sciences can find their place.

⁷ Edward T. Owen, in *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*, XXIII (1927), 269, note. The 'horse-at-night' theory is also the basis of Frank R. Blake's feeble and misguided article, 'The Study of Language from the Semantic Point of View,' *Indogermanische Forschungen*, LVI (December, 1939), 241-255.

⁸ Aldous Huxley, *Words and their Meanings* (Los Angeles: The Ward Ritchie Press, 1940), pp. 16-17, rightly says: 'I have already mentioned the apparently irresistible human tendency to objectify psychological states and project them, on the wings of their verbal vehicle, into the outer world. Words like those I have just mentioned ['beauty', 'goodness', 'spirit', 'personality'] are typical vehicles of objectification. They are the cause of endless intellectual confusion, endless emotional distress, endless misdirections of voluntary effort.'

⁹ The theories of Erdmann, Bréal, Trench, Stöcklein, Darmesteter, de Saussure, etc., are summarized by J. R. Firth, 'The Technique of Semantics,' *Transactions of the Philological Society* [London], 1935, pp. 36-51.

a relative frequency index or a time-index on the basis of a particular body of usage, and perhaps use it as an arbitrary standard by which to compare variations in other contexts. All meanings are 'applied'; and if some may be called 'marginal', it is only on a statistical basis.

In a semantic dictionary orientated for present-day users, the remote, speculative etymology has but a small degree of relevance. Contexts of known particular time-indexes are all-important. To be sure, an etymology will sometimes reveal the assumptions behind a particular term. The word *psychology*, for instance, reflects the belief in an objectified 'psyche', and a student of general semantics can no longer use it as it was formerly used. The problems that the 'psychologist' attempted to deal with are still with us, but we can no longer use his false-to-fact terminology, or if we use his word-forms the contexts must unmistakably make plain the new orientation. Sane considered, the term *etymology* designates the earliest known or hypothesized meaning—merely a meaning with an early time-index. One should not give it any authority in considering present-day usage but should depend on an analysis of contexts that have synchronic situational indices. As a modifying consideration, the re-enactment of earlier situations through the medium of written records or oral tradition is a factor in the analysis of present-day meaning. The speculation about meaning and 'etymology' for the period before relatively full contexts are available is pretty much a waste of time.

The process of re-abstraction, in one direction or another, in varying frequencies, results in 'change of meaning'. The 'arca' (or 'scatter') of meaning of a word-form is not necessarily unified, since obsolescence (i.e. a relative frequency approaching zero) in some parts may have resulted in the isolation of certain 'senses'. But standard lexicographical practice tends to give meanings an artificially codified appearance. In the compilation of the *Oxford English Dictionary*, the meanings were analyzed on the basis of large collections of evidence, but then the intermediate or transitional quotations were discarded as being 'ambiguous' or 'not clear'. This results in a false picture, for actual usage often does not conform to the neat patterns there displayed.¹⁰

A grave danger in dealing with words is to regard a word as a receptacle into which a meaning is poured. This is a false elementalistic outlook. A word, as established in the social framework, can be regarded as having several aspects or dimensions, all of which are present at one time. A full semantic description of a word involves at least four aspects or dimensions: 'phonology' (the particularization of the word-form), 'syntax' (the relation of word-forms one to another), 'lexicon' (the relation of the word-form to what it is used to represent or symbolize), and 'pragmatics' (the relation of

¹⁰ Existing dictionaries can well be consulted for revising gross departures from the norm. A certain number of people scattered over the Middle West use the word *urban* as referring to the country rather than the city. This arises, I believe, from the word *interurban*, for a trolley-car that runs through the country: they ignore the directive force of the *inter* component and assume that *urban* applies to the rural surroundings. I discovered a graduate student in sociology at a large Middle Western university who had worked several months on a thesis concerning 'urban problems', which he interpreted as 'rural problems'. One would think that his reading must have yielded peculiar effects; but he did not believe me and became angry when I told him the usual meaning of the word. If enough people held the view of this student, it would become a factor in communication, but at present such a sense is a 'sport'.

the word-form to the people who are communicating).¹¹ A quoted sentence is only part of a context, for a full context involves the total evaluational processes of the people communicating. For the most part in this particular project only lexicon, together with pragmatics on occasion, will be dealt with, in order to simplify the task.

In a semantic description, the lexical component (the relation of the word-form to what it represents) may be said to be multi-dimensional. The word not only occupies an 'area' of meaning, designating the range of situations or things to which it relates, but also it has a third dimension in the order of abstraction it represents (in the context of each particular use). Unfortunately there seems to be no way of constructing an objective scale by which the orders of verbal abstraction may be gauged.¹² The best that can be done at present is to point out the fact in general terms, and it must be caught in the manner of a visualization or an 'insight'. What is important is the consciousness of the process.¹³

The pragmatic aspect of a semantic description is not separable from the other aspects, but the term may be used to designate such features as the 'social prestige' accompanying the word, the scale of 'popular-learned' character, the geographical scatter, etc. Such matters have much to do with arousing the 'emotions' ('poetic', 'patriotic', 'sexual', 'fear'-ridden, etc.) which previous instances of use have generated and which, through association, cling to the word when it is used again. I avoid here the word *connotation*, inasmuch as the making of a sharp contrast between 'connotation' and 'denotation' introduces a two-valued judgment. 'Connotation' represents the abstracting of a complex of features (chiefly in the pragmatic dimension) different from the set abstracted for 'denotation'.¹⁴

Terms that designate structural relations rather than objects must be applied elastically enough so that they alter with the relations that they represent. Such *multi-ordinality*, as it is called, at first blush seems like sloppy ambiguity, but it is a necessary adjustment to relations that vary according to context. These multiordinal terms will require special pains in the compilation of the proposed *Guide*. As an example we may take the word *honor* in an Associated Press dispatch of 1941 from Syria: 'French officers who capitulated to the forces invading Syria expressed sympathy with

¹¹ The term *pragmatics* is adopted from Charles W. Morris, in *Foundations of the Theory of Signs*, *International Encyclopedia of Unified Science*, Vol. I, No. 2 (Chicago: The University of Chicago Press, 1938), pp. 29-42, although he uses *semantics* where I have used *lexicon*. The importance of this dimension can be gathered from the writings of George H. Mead, especially his *Mind, Self and Society from the Standpoint of a Social Behaviorist* (Chicago: The University of Chicago Press, 1934), pp. 160-161, 253-260.

¹² As Korzybski says, *op. cit.*, p. 434: 'As to "orders of abstraction", we have no possibility of ascertaining the "absolute" order of an abstraction.'

¹³ This is certainly fundamental in Korzybski's outlook, and he devotes several chapters to it, *op. cit.*, pp. 371-451. He states, p. 483, that one of the aims of education is to develop the ability of passing to higher and higher abstractions. Therefore it is astonishing to find that Margaret M. Bryant and Janet Rankin Aiken, in their *Psychology of English* (New York: Columbia University Press, 1940), twice, pp. 4 and 222, list Korzybski as being opposed to abstraction. This mistake probably springs from dependence upon the misleading summary by Stuart Chase, in *The Tyranny of Words* (New York: Harcourt, Brace and Co., 1938), where the slogan 'find the referent' beclouds the more complex elements of the theory of general semantics.

¹⁴ The term *connotation* is often applied in an elementalistic way, as if a word has not only a 'meaning' but also a 'connotation' added to it, to delight or to mislead the hearer. But a word in any context has its effect as a whole in producing its responses.

the British cause and hatred of Germany. Asked why, then, they fought the Allied forces, they replied: "We have to do our duty and clear our honor before coming over."¹⁵ In this instance actual deaths were caused, both for the French and the British, by the semantic blockage over the word *honor*. The French admitted that the best interests of France lay in an alliance with the British, and hence 'honor', on this high level of abstraction, would entail co-operation with the British; but on a lower level of abstraction, relating to simpler situations, the word *honor* is applied to a simple holding of the fort against all comers. These Frenchmen did not discriminate wisely between the levels. The multiordinal character of this term appears with each successive refinement of situation, as, 'My honor requires the honoring of my honor,' or 'the honoring of the honoring of my honor.' The word *word* is a multiordinal term having a much higher range of abstraction than is commonly realized.

Words may also be placed on a descriptive-inferential scale. A training in general semantics permits a person to discount inferential features and to approach the relative 'purity' in abstracting found at the descriptive end of the scale. If some misguided sociologist wrote a scientific treatise entitled, *The Immigration of Wops to the United States*, a student of general semantics could no doubt make the effort to interpret *Wop* simply as 'person of Italian origin'; but general semantics does not give the sociologist *carte blanche* to try an experiment in using such a title. The relatively inferential character of *Wop* has been determined by the repeated experiences of those familiar with our cultural setting. Training in general semantics allows us to rise above the prejudices and obsessions characteristic of ethnic groups; but the denial of the pragmatic aspect of certain words would be a false-to-fact analysis of cultural factors that have produced us.

The inferential character of some words is so strong that they may be called 'stipulative'. They usually entail an attitude (a relatively fixed response-pattern). The following are examples of these stipulative words:

CEASE: 1940 R. MOSES in *Life* 14 Oct. 112 Let us suppose now that the President . . . will cease stirring up class hatred and factionalism.

CLUTCHES: 1941 *N. Y. Times* 9 Aug. 5/1 [Dispatch from Berlin:] In short, the German statement complained, no domain of official governmental activities in South and Central America has escaped the 'clutches' of the 'invader from the north.'

CONDONE: 1941 W. M. J. BRUSH in *N. Y. D. News* 25 April 29/5 It is unfortunate that Mrs. F. D. Roosevelt condones strikes.

CONNIVANCE: 1940 A. VANDENBERG in *Wash. Post* 27 Oct. I. 2/1 A third-term President of the United States—nominated by his long and cunning connivance—is not only fatal violation [etc.].

RENOUNCE: 1940 *Wash. Times Herald* 4 Nov. 1/4 He [Willkie] called upon Mr. Roosevelt to 'renounce' his 'distrust of the people of America after his defeat.'

TAINT: 1940 G. S. WHERRY in *Ethics* Oct. 1/17 The book is singularly free from the taint of clericalism.

On theoretical grounds it must be admitted that practically any word in the language, even the labels of simple objects, can cause semantic difficulties. The problem therefore arises how to select the word-stock in a semantic guide. As a practical expedient I shall depend on the collecting of illustrative quotations from wide reading in

¹⁵ New York Post, June 11, 1941, p. 1/2.

newspapers, magazines, and books, upon clinical reports of psychiatrists, and upon the recorded experiences of workers in such empirical fields as biology, history, political science, education, etc. Thus the word-list will not be extracted from existing dictionaries, but will be assembled from original collections of passages in which semantic difficulties are found. The result will be only a sampling of the potential material, but it is hoped that the body will be sufficiently large to include crucial words and typical examples of others.¹⁶

I embarked on this project in the spring of 1940 and in the first two years have assembled over 5,000 illustrative passages. I intend to continue the collecting on the side, in addition to my regular work, for seven or eight years, until I have a collection of about 40,000 quotations, dealing with several thousand words, not exceeding 10,000. Some important words, like *Americanism*, *fascist*, *foreigner*, *liberal*, *loyal*, *-monger*, *progress*, *propaganda*, *socialist*, *subversive*, etc., will have a considerable body of quotations each, while other words will be put in with a warning, on the basis of a single quotation.¹⁷ When the body of 40,000 quotations is in hand, I hope to be able to devote two years to this project exclusively, one for surveying relevant literature, and the second for preparing copy for the printer. Thus it will be ten or twelve years before the finished *Guide* is available to the public.

On the basis of the meager 5,000 quotations so far collected (out of the projected 40,000), the first hundred and fifty or so words in the letter P for which illustrations have been gathered, in their particular contexts, are as follows:

pachydermous	pander, -er	passel
pacifism, -ist	panic	passion
pack (a court)	pansy	paste (v.)
pact	pantywaist	pastiche
pad (v.)	panzer	patchwork
paddle	paper (attrib. for 'planned')	patent medicine
pagan	paperhanger (for 'Hitler')	paternalism
paid columnist	pappy ¹⁸	pathologie
pain	parasite, -ism	patience
painted	Parisian	patriot, -ic, -ism
palace	parlor pink	patronage
paladin		paunchy
palladium		pauper

¹⁶ S. I. Hayakawa recognizes that selection is feasible, in *Language in Action* (Mimeographed ed.; Madison, Wisconsin, 1939), p. 95: 'There are in all our minds, certain key-words of unexamined meaning which can automatically send our thoughts along certain invariable routes.' Cf. also J. R. Firth, *loc. cit.*, p. 40: 'Research into the detailed contextual distribution of sociologically important words, what one might call *focal* or *pivotal* words, is only just beginning.' Cf. *ibid.*, pp. 67, 69. Oliver L. Reiser has written in *Tomorrow*, I (February, 1942), 37: 'As examples of words standing in need of what is now termed semantic analysis, we may cite such terms as "liberty", "rights", "fascism", "toleration", "spirit", "soul", "aggression", "adequate defense", "Americanism", and the like.'

¹⁷ Professor Kemp Malone assembled over 1500 quotations for his study of one word, 'On Defining *mahogany*', *Language*, XVI (Oct.-Dec., 1940), 308-318. He thinks that about 1000 passages would be 'a body of material large enough to make a sound basis for a scientifically accurate definition of the word' (p. 309). This is the counsel of perfection, as he admits; in the end the practical lexicographer brings into play a general 'experience'.

¹⁸ As in the Texas slogan, 'Pass the biscuits, pappy.' Such paraforms as 'passel' (below) for 'parcel', 'holler' for 'hollow', etc., have an independent semantic character. Being 'agin the government' is much different from being 'against the government'.

palmy days	Philistinism	plunder
pamper	philosopher, -y	plutocracy, -at,
panacea	phony	-atic
parochial	phooey	pocket-sized
partisan	phrasemonger	poet, -ry
party line	pick on	pogrom
paymaster	picket	poison (<i>n.</i> and <i>v.</i>)
peace	Pickwickian	poison pen
peace offensive	pictorial	polemic
peanut politician	picturesque	police force
Pearl Harbor	pie (in the sky)	policeman
peasant, -ry	pilfer	polish off
peculiar institution	pillar	political, -ian,
(for 'slavery')	pillory	-ics
peddle, pedlar	pimp	pollute
peek	pincers	pomposity
peel (for 'unclothe')	pink (<i>n.</i> and <i>adj.</i>)	pond (for 'ocean')
peninsula	pinko	pontificate
people	pink tea	pony express
pepper	pinpoint	pool (<i>vs.</i> billiards)
percolate	pioneer	poor
perfection, -ist	pious	poorhouse
performance	pirate, -ical	poor white
performer	pitch (into one)	pop
perfume (<i>v.</i>)	plague	pope, -dom, -ery,
perish	plain American	-ish
perjury	plan (<i>n.</i> and <i>v.</i>)	popularizer
permissive	planet, -ary	porcupine
pernicious	platform	pork
perpetrate, -or	play, -er	pork-barrel
perpetual	play ball (<i>v.</i>)	pornography
perpetuate	playboy	pose
persecute	playing field	positive
person, -age, -al,	(of Eton)	possessed
-ality	playmate	possession
persuade	pleasure	possibility
perversion	plight	pot-bellied
pervert (<i>n.</i> and <i>v.</i>)	plod	pot-boiler
pet	plot (<i>n.</i> and <i>v.</i>)	pounce
petticoat rule	plough under	pour
petulant	pluck	powder puff (attrib.)
phantom	plug	power
Ph. D.	plum-thirsty	pox

Sentences that speak of a word as a word represent a summary or generalization of an undetermined number of contexts in which it is used as a symbol. Their value is contingent on the accuracy of the observer, but they may be regarded as a short-cut. Such sentences consciously introduce another order of abstraction, and this increasing of the awareness of abstracting should have a beneficial result. Sample quotations in this class are:

ASSASSINATION: 1940 ELSWYTH THANE *England Was an Island Once* 66 Ever since Sarajevo the word 'assassination' has contained a peculiar terror.

COLONIAL: 1928 ELIZ. BANKS *Remaking of an American* 158 A visiting Englishman . . . spoilt everything and made himself hated by referring to Canadians as 'you patriotic Colonials' and calling their country 'our proudest possession.'

COVENANT: 1941 P. W. WILSON in *N. Y. Times Bk. Rev.* 27 April 1/4 Wilson liked the word covenant. It reminded him of a Presbyterian ancestry.

FASCIST: 1941 F. L. SCHUMAN in *Nation* 25 Jan. 111/1 It's no use dismissing Dennis as a 'fascist'. He admits it. His argument must be met on its merits, not by a label.

REGICIDE: 1908 T. D. MURPHY *British Highways & Byways* 120 The man spoke the word 'regicide' as though he felt the stigma that it carries with it everywhere in England, even though applied to the judge who condemned to death Charles Stuart, a man who well deserved to die.

In conclusion I should like to present a series of quotations illustrative of words that cause semantic blockages. It is hoped that the proposed *Guide* will abound with passages of this sort:

ANGLO-SAXON: 1942 *Chicago Defender* [Negro newspaper] 4 April 17/7 New York Times writers who refer to the U. S. as 'We Anglo-Saxons' should see some of the Anglo-Saxons at Forty-seventh and South Parkway.

CIDER: 1870 DAVID MACRAE *Americans at Home* II. 307 I have heard of a deacon who drew rein at a farm-house door on a very hot day. He was offered a glass of cider. 'Cider,' said the deacon ruefully, wiping his hot brow with his pocket-handkerchief. 'No: cider ain't allowed in the pledge. But if you'll call it apple-juice I'll take a drop.'

COMEBACK: 1941 POLA NEGRI in *N. Y. Post* 28 July 1/1 I hate the word 'comeback,' and this is not a comeback. After all, I've been working in Europe all the time. I am thinking of nothing but my work and a really great picture. I belong to my public.

CONSCIENCE: 1939 EDW. MURROW *This Is London* (1941) 56 I talked with those men on the bench for over an hour and I asked them for a definition of conscience and they couldn't give me one. But they all agreed that a British subject should have the right to say what his conscience dictates before he is forced to fight.

DEATH: 1941 B. ATKINSON in *N. Y. Times* 9 March IX. 1/2 It would be easier to respect 'Claudia' as a play if Claudia, her husband and her mother faced the facts candidly, used the ugly word 'death' in its right place and spoke their minds like intelligent people.

DEVIL: 1941 *N. Y. Times* 11 May IX. 4/4 It was forbidden to mention that Charles Coburn was the devil in 'The Devil and Miss Jones,' recently, because the devil is considered bad box office.

DIVORCE: 1940 B. CHETWYND *Town Wife* 237 Of course divorce is a horrid thing to have in one's family, but it would be wonderful, wouldn't it?

INSURRECTION: 1936 Sir ANTHONY JENKINSON *America Came my Way* 283 'This is not a Textile strike,' he [the governor of Rhode Island in 1934] declared, 'but a Communist insurrection.'

LITERATURE: 1940 M. V. HUGHES *London Family between Wars* 81 Another teacher approached me one day after a lecture with a large limply-bound Bible open in her left hand; placing her right hand reverently over it she said, 'I refuse to regard the Bible as literature.' . . . I fancy that 'Literature' in her school had been a water-tight compartment.

REBEL: 1940 R. WESTERBY *Voice from England* 105 We saw how the 'Spanish Government' became the 'Reds,' and how 'The Rebels' and 'The Insurgents,' became the 'Nationalists,' and 'The Anti-Reds.'

SEX: 1927 M. ARLEN *Young Men in Love* 80 Ysabel had all the American woman's capacity for hiding a fierce sensuality behind a puritanical rejection of the word 'sex'.¹⁹

¹⁹ Cf. also the following report by D. Walker in the *N. Y. Daily News*, Feb. 27, 1941, p. 44/1: 'Raymond Scott features a quintet as part of his orchestra. Actually there are six

men in the group, but Scott objects to calling them a sextet, because he feels it sounds "suggestive". For other words of related meaning, see the writer's study, 'An Obscenity Symbol,' *American Speech*, IX (December, 1934), 264-278.

SWASTIKA: 1941 GEORGE PAIGE in *N. Republic* 16 June 830/1 It has become fashionable in the past few years 'to fight fascism' merely by 'chasing the swastika'—that is, by hounding the Bund and exposing only crackpot and sensational Nazi groups. Consequently, swastika-chasers have played directly into the hands of Goebbels: it was Hitler himself who decreed it the function of such groups as the Bund to monopolize public attention in order to divert it from the major transmission belts of fascism.²⁰

TOILET PAPER: 1934 *Business* in *N. Statesman* 27 Oct. 580 The designer of a new branded toilet paper realised that two problems faced him. First, the embarrassment of women shoppers when demanding 'toilet paper'. . . . A new name—bath-room tissues—receives prominence. . . . The new angle on selling raised sales 50 per cent.

Too much cannot be expected of a mere dictionary, for the best training comes from an awareness of the un-speakable (or silent) levels,²¹ but if a dictionary can minimize the 'is' of identity, display the variation of contexts, and point out the differing levels of abstractions, it should be a means of transforming our reactions to words, *i. e.* from the lower nerve centers that take care of the ordinary flow of speech to the higher nerve centers, where conditionality of response can be introduced. Thereby fixed patterns of response to certain verbal stimuli can be reshaped and re-formed. Many people regard the 'language' as a strait-jacketed affair, covered by a dictionary and a book of grammar, but an informal 'guide', such as that here described, should help to restore a sense of freedom. Even before the proposed work is available, the recognition of the need of it should act as a corrective in the use of existing dictionaries and should help to clarify an area of linguistic theory.

²⁰ Similarly the raising of Hitler into a personal devil (while delusively effective on an infantile plane) is a semantic disturbance that deflects attention from important structural matters—the impossibility of sane living within the fascist organization of society.

²¹ Korzybski, *op. cit.*, pp. 476-478.

LANGUAGES AND LOGIC

*Chemical Compound or Mechanical Mixture, a Sentence Hides within Its
Structure Laws of Thought Profoundly Important
to the Advance of Science**

BENJAMIN LEE WHORF

In English, the sentences 'I pull the branch aside' and 'I have an extra toe on my foot' have little similarity. Leaving out the subject pronoun and the sign of the present tense, which are common features from requirements of English syntax, we may say that no similarity exists. Common, and even scientific, parlance would say that the sentences are unlike because they are talking about things which are intrinsically unlike. So Mr. Everyman, the natural logician, would be inclined to argue. Formal logic of an older type would perhaps agree with him.

If, moreover, we appeal to an impartial scientific English-speaking observer, asking him to make direct observations upon cases of the two phenomena to see if they may not have some element of similarity which we have overlooked, he will be more than likely to confirm the dicta of Mr. Everyman and the logician. The observer whom we have asked to make the test may not see quite eye to eye with the old-school logician and would not be disappointed to find him wrong. Still he is compelled sadly to confess failure. 'I wish I could oblige you,' he says, 'but try as I may, I cannot detect any similarity between these phenomena.'

By this time our stubborn streak is aroused; we wonder if a being from Mars would also see no resemblance. But now a linguist points out that it is not necessary to go as far as Mars. We have not yet scouted around this earth to see if its many languages all classify these phenomena as disparately as our speech does. We find that in Shawnee these two statements are, respectively, *ni-l'θawa-'ko-n-a* and *ni-l'θawa-'ko-θite* (the *θ* here denotes *th* as in 'thin' and the apostrophe denotes a breath-catch). The sentences are closely similar; in fact, they differ only at the tail end. In Shawnee, moreover, the beginning of a construction is generally the important and emphatic part. Both sentences start with *ni-* ('I'), which is a mere prefix. Then comes the really important key word, *l'θawa*, a common Shawnee term, denoting a forked outline, like Fig. 1, No. 1 (page 44). The next element, *-'ko*, we cannot be sure of, but it agrees in form with a variant of the suffix *-a'kw* or *-a'ko*, denoting tree, bush, tree part, branch, or anything of that general shape. In the first sentence, *-n-* means 'by hand action' and may be either a causation of the basic condition (forked outline) manually, an increase of it, or both. The final *-a* means that the subject ('I') does this action to an appropriate object. Hence, the first sentence means 'I pull it (something like branch of tree) more open or apart where it forks.' In the other sentence, the suffix *-θite* means 'pertaining to the toes', and the absence of further suffixes means

* This paper by the late Mr. Whorf has also appeared in *The Technology Review* (Massachusetts Institute of Technology, Cambridge), XLIII, No. 6, (1941), and is reprinted here with the editors' kind permission.

that the subject manifests the condition in his own person. Therefore the sentence can mean only 'I have an extra toe forking out like a branch from a normal toe.'

Shawnee logicians and observers would class the two phenomena as intrinsically similar. Our own observer, to whom we tell all this, focusses his instruments again upon the two phenomena and to his joy sees at once a manifest resemblance. Figure 2 (page 49), illustrates a similar situation: I 'push his head back' and 'I drop it in water and

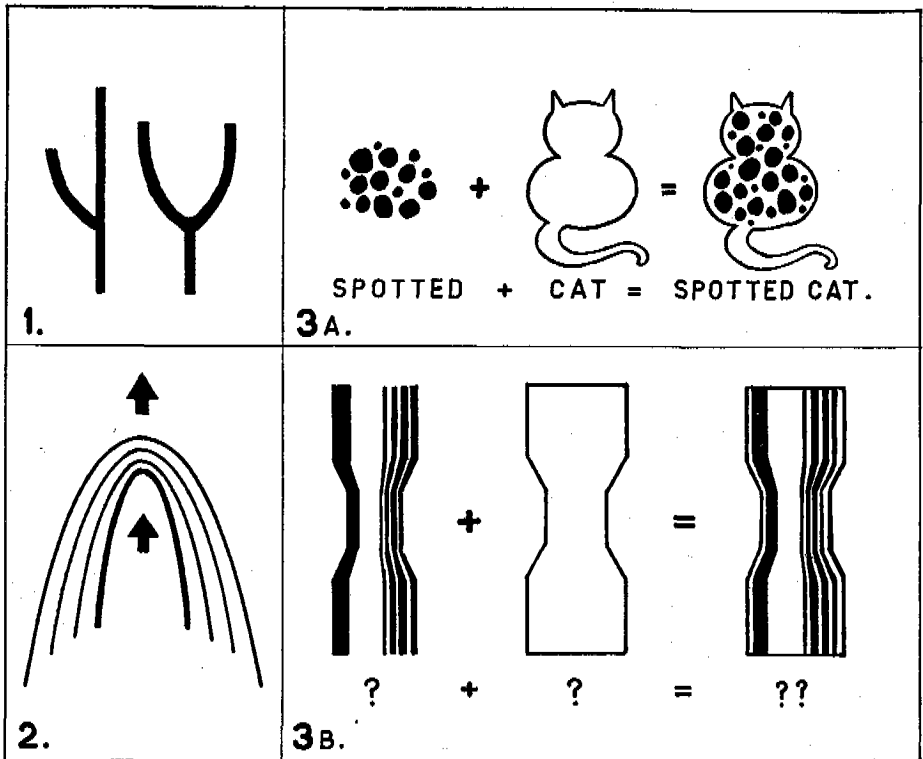


FIGURE 1.—Suggested above are certain linguistic concepts which, as explained in the text, are not easily definable.

it floats,' though very dissimilar sentences in English, are similar in Shawnee. The point of view of linguistic relativity changes. Mr. Everyman's dictum: Instead of saying, 'Sentences are unlike because they tell about unlike facts,' he now reasons: 'Facts are unlike to speakers whose language background provides for unlike formulations of them.'

Conversely, the English sentences, 'The boat is grounded on the beach' and 'The boat is manned by picked men,' seem to us to be rather similar. Each is about a boat; each tells the relation of the boat to other objects—or that's *our* story. The linguist would point out the parallelism in grammatical pattern thus: 'The boat is zed prep-

osition y .' The logician might turn the linguist's analysis into ' A is in the state of x in relation to y ,' and then perhaps into $fA = xRy$. Such symbolic methods lead to fruitful techniques of rational ordering, stimulate our thinking, and bring valuable insights. Yet we should realize that the similarities and contrasts in the original sentences, subsumed under the foregoing formula, are dependent on the choice of the mother tongue and that the properties of the tongue are eventually reflected as peculiarities of structure in the fabric of logic or mathematics which we create.

In the Nootka language of Vancouver Island, the first 'boat' statement is *tlih-is-ma*; the second, *lash-~~tskwiq~~-ista-ma*. The first is thus I-II-*ma*; the second, III-IV-V-*ma*; and they are quite unlike, for the final *-ma* is the only sign of the third-person indicative. Neither sentence contains any unit of meaning akin to our word *boat* or even *canoe*. Part I, in the first sentence, means 'moving pointwise', or moving in a way like the suggestion of the outline in Fig. 1, No. 2; hence 'traveling in or as a canoe', or an event like one position of such motion. It is not a name for what we should call a *thing*, but is more like a vector in physics. Part II means 'on the beach'; hence I-II-*ma* means it is on the beach pointwise as an event of canoe motion', and would normally refer to a boat that had come to land. In the other sentence, part III means 'select, pick', and IV means 'remainder, result', so that III-IV means 'selected'. Part V means 'in a canoe (boat) as crew'. The whole, III-IV-V-*ma*, means either 'they are in the boat as a crew of picked men' or 'the boat has a crew of picked men.' It means that the whole event involving picked ones and boat's crew is in process.

As a hangover from my education in chemical engineering, I relish an occasional chemical simile. Perhaps readers will catch what I mean when I say that the way the constituents are put together in these sentences of Shawnee and Nootka suggests a chemical compound, whereas their combination in English is more like a mechanical mixture. A mixture, like the mountaineer's *potlicker*, can be assembled out of almost anything and does not make any sweeping transformation of the overt appearance of material. A chemical compound, on the other hand, can be put together only out of mutually suited ingredients, and the result may be not merely soup but a crop of crystals or a cloud of smoke. Likewise the typical Shawnee and Nootka combinations appear to work with a vocabulary of terms chosen with a view not so much to the utility of their immediate references as to the ability of the terms to combine suggestively with each other in manifold ways that edict novel and useful images. This principle of terminology and way of analyzing events would seem to be unknown to the tongues with which we are familiar.

It is the analysis of nature down to a basic vocabulary capable of this sort of evocative recombination which is most distinctive of polysynthetic languages, like Nootka and Shawnee. Their characteristic quality is not, as some linguists have thought, a matter of the tightness or indissolubility of the combinations. The Shawnee term *l'θawa* could probably be said alone but would then mean 'it (or something) is forked', a statement which gives little hint of the novel meanings that arise out of its combinations—at least to our minds or our type of logic. Shawnee and Nootka do not use the chemical type of synthesis exclusively. They make large use of a more external kind of syntax, which, however, has no basic structural priority. Even our own Indo-European tongues are not wholly devoid of the chemical method, but they

seldom make sentences by it, afford little inkling of its possibilities, and give structural priority to another method. It was quite natural, then, that Aristotle should found our traditional logic wholly on this other method.

Let me make another analogy, not with chemistry but with art—art of the pictorial sort. We look at a good still-life painting and seem to see a lustrous porcelain bowl and a downy peach. Yet an analysis that screened out the totality of the picture—as if we were to go over it carefully, looking through a hole cut in a card—would reveal only oddly shaped patches of paint and would not evoke the bowl and fruit. The synthesis presented by the painting is perhaps akin to the chemical type of syntax, and it may point to psychological fundamentals that enter into both art and language. Now the mechanical method in art and language might be typified by Fig. 1, No. 3A. The first element, a field of spots, corresponds to the adjective 'spotted', the second corresponds to the noun 'cat'. By putting them together, we get 'spotted cat'. Contrast the technique in Fig. 1, No. 3B. Here the figure corresponding to 'cat' has only vague meaning by itself—'chevron-like', we might say—while the first element is even vaguer. But combined, these evoke a cylindrical object, like a shaft casting.

The thing common to both techniques is a systematic synthetic use of pattern, and this is also common to all language techniques. I have put question marks below the elements in Fig. 1, No. 3B, to point out the difficulty of a parallel in English speech and the fact that the method probably has no standing in traditional logic. Yet examination of other languages and the possibility of new types of logic that has been advanced by modern logicians themselves, suggest that this matter may be significant for modern science. New types of logic may help us eventually to understand how it is that electrons, the velocity of light, and other components of the subject matter of physics appear to behave illogically, or that phenomena which flout the sturdy common sense of yesteryear can nevertheless be true. Modern thinkers have long since pointed out that the so-called *mechanistic way of thinking has come to an impasse before the great frontier problems of science*. To rid ourselves of this way of thinking is exceedingly difficult when we have no linguistic experience of any other and when even our most advanced logicians and mathematicians do not provide any other—and obviously they cannot without the linguistic experience. For the mechanistic way of thinking is perhaps just a type of syntax natural to Mr. Everyman's daily use of the western Indo-European languages, rigidified and intensified by Aristotle and the latter's medieval and modern followers.

As I said in an article, 'Science and Linguistics',¹ the effortlessness of speech and the unconscious way we picked up that activity in early childhood lead us to regard talking and thinking as wholly straightforward and transparent. We naturally feel that they embody self-evident laws of thought, the same for all men. We know all the answers! But when scrutinized, they become dusty answers. We use speech for reaching agreements about subject matter: I say, 'Please shut the door', and my hearer and I agree that 'the door' refers to a certain part of our environment and that I want a certain result produced. Our explanations of how we reached this understanding, though quite satisfactory on the everyday social plane, are merely more agreements (state-

¹ See *The Technology Review*, XLII, No. 6 (April, 1940). Reprints of this earlier article may be secured from the Institute of General Semantics, Chicago.

ments) about the same subject matter (door, and so on), more and more amplified by statements about the social and personal needs that impel us to communicate. There are here no laws of thought. Yet the structural regularities of our sentences enable us to sense that laws are *somewhere* in the background. Clearly, explanations of understanding such as 'And so I ups and says to him, says I; see here, why don't you . . . !' evade the true process by which 'he' and 'I' are in communication. Likewise psychological-social descriptions of the social and emotional needs that impel people to communicate with their fellows tend to be learned versions of the same method and, while interesting, still evade the question. In similar case is evasion of the question by skipping from the speech sentence, via physiology and 'stimuli', to the social situation.

The *why* of understanding may remain for a long time mysterious; but the *how* or logic of understanding—its background of laws or regularities—is discoverable. It is the grammatical background of our mother tongue, which includes not only our way of constructing propositions but the way we dissect nature and break up the flux of experience into 'objects' and 'entities' to construct propositions about. This fact is important for science because it means that science *can* have a rational or logical basis even though it be a relativistic one and not Mr. Everyman's natural logic. Although it may vary with each tongue, and a planetary mapping of the dimensions of such variation may be necessitated, it is, nevertheless, a basis of logic with discoverable laws. Science is not compelled to see its thinking and reasoning procedures turned into processes merely subservient to social adjustments and emotional drives.

Moreover, the tremendous importance of language cannot, in my opinion, be taken to mean necessarily that nothing is back of it of the nature of what has traditionally been called *mind*. My own studies suggest, to me, that language, for all of its kingly rôle, is in some sense a superficial embroidery upon deeper processes of consciousness which are necessary before any communication, signalling, or symbolism whatsoever can occur and which also can at a pinch effect communication (though not true *agreement*) without language's and without symbolism's aid. I mean 'superficial' in the sense that all processes of chemistry, for example, can be said to be superficial upon the deeper layer of physical existence, which we know variously as intra-atomic, electronic, or subelectronic. No one would take this statement to mean that chemistry is *unimportant*—indeed the whole point is that the more superficial can mean the more important, in a definite operative sense. It may even be in the cards that there is no such thing as 'Language' (with a capital *L*) at all! The statement that 'thinking is a matter of *language*' is an incorrect generalization of the more nearly correct notion that 'thinking is a matter of *different tongues*.' The different tongues are the real phenomena and may generalize down not to any such universal as 'Language', but to something better—called 'sublinguistic' or 'super-linguistic'—and *not altogether* unlike, even if much unlike, what we now call 'mental'. This generalization would not diminish, but would rather increase, the importance of intertongue study for investigation of this realm of truth.

Botanists and zoologists, in order to understand the world of living species, found it necessary to describe the species in every part of the globe and to add a time perspective by including the fossils. Then they found it necessary to compare and con-

trast the species, to work out families and classes, evolutionary descent, morphology, and taxononomy. In linguistic science a similar attempt is under way. The far-off event toward which this attempt moves is a new technology of language and thought. Much progress has been made in classifying the languages of earth into genetic families, each having descent from a common precursor, and in tracing such developments through time. The result is called 'comparative linguistics'. Of even greater importance for the future technology of thought is what might be called 'contrastive linguistics'. This plots the outstanding differences between tongues—in grammar, logic, and general analysis of experiences.

As I said in 'Science and Linguistics', segmentation of nature is an aspect of grammar—one as yet little studied by grammarians. We cut up and organize the spread and flow of events as we do largely because, through our mother tongue, we are parties to an agreement to do so, not because nature itself is segmented in exactly that way for all to see. Languages differ not only in how they build their sentences but in how they break down nature to secure the elements to put in those sentences. This breakdown gives units of the lexicon. *Word* is not a very good 'word' for them; 'lexeme' has been suggested, and *term* will do for the present. By these more or less distinct terms we ascribe a semi-fictitious isolation to parts of experience. English terms, like *sky*, *hill*, *swamp*, persuade us to regard some elusive aspect of nature's endless variety as a distinct *thing*, almost like a table or chair. Thus English and similar tongues lead us to think of the universe as a collection of rather distinct objects and events corresponding to words. Indeed this is the implicit picture of classical physics and astronomy—that the universe is essentially a collection of detached objects of different sizes.

The examples used by older logicians in dealing with this point are usually unfortunately chosen. They tend to pick out tables and chairs and apples on tables as test objects to demonstrate the objectlike nature of reality and its one-to-one correspondence with logic. Man's artifacts and the agricultural products he severs from living plants have a unique degree of isolation; we may expect that language will have fairly isolated terms for them. The real question is: What do different languages do, not with these artificially isolated objects but with the flowing face of nature in its motion, color, and changing form; with clouds, beaches, and yonder flight of birds? For as goes our segmentation of the face of nature, so goes our physics of the cosmos.

Here we find differences in segmentation and selection of basic terms. We might isolate something in nature by saying, 'It is a dripping spring.' Apache erects the statement on a verb *ga*: 'be white (including clear, uncolored, and so on).' With a prefix *nō*- the meaning of downward motion enters: 'whiteness moves downward.' Then *tō*, meaning both 'water' and 'spring', is prefixed. The result corresponds to our 'dripping spring', but synthetically it is: 'as water, or springs, whiteness moves downward.' How utterly unlike our way of thinking! The same verb, *ga*, with a prefix that means 'a place manifests the condition' becomes *gohlga*: 'the place is white, clear; a clearing, a plain.' These examples show that some languages have means of expression—*chemical combination*, as I called it—in which the separate terms are not as separate as in English but flow together into plastic synthetic creations. Hence such languages, which do not paint the separate-object picture of the universe to the same degree as do English

and its sister tongues, point toward possible new types of logic and possible new cosmical pictures.

The Indo-European languages and many others give great prominence to a type of sentence having two parts, each part built around a class of word—substantives and verbs—which those languages treat differently in grammar. As I showed in 'Science and Linguistics', this distinction is not drawn from nature; it is just a result of the fact that every tongue must have some kind of structure, and those tongues have made a go of exploiting this kind. The Greeks, especially Aristotle, built up this contrast and made it a law of reason. Since then, the contrast has been stated in logic in many

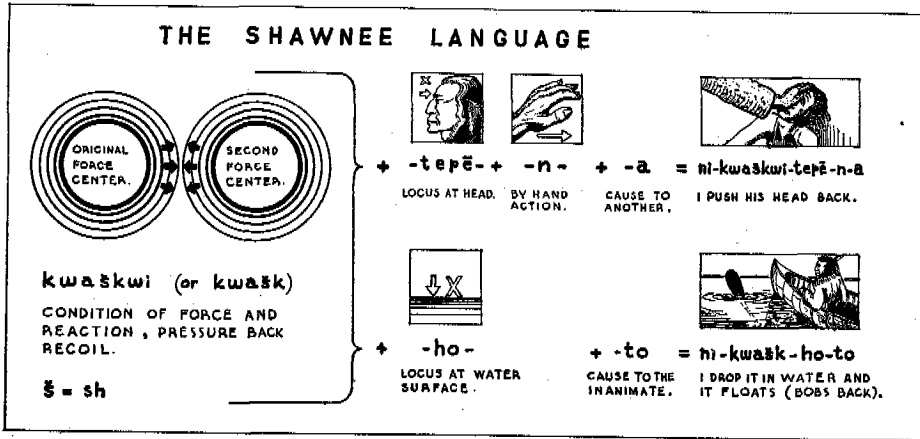


FIGURE 2.—The English sentences 'I push his head back' and 'I drop it in water and it floats' are unlike. But in Shawnee the corresponding statements are closely similar, emphasizing the fact that analysis of nature and classification of events as like or in the same category (logic) are governed by grammar.

different ways: subject and predicate, actor and action, things and relations between things, objects and their attributes, quantities and operations. And, pursuant again to grammar, the notion became ingrained that one of these classes of entities can exist in its own right but that the verb class cannot exist without an entity of the other class, the 'thing' class, as a peg to hang on. 'Embodiment is necessary,' the watchword of this ideology, is seldom *strongly* questioned. Yet, the whole trend of modern physics, with its emphasis on 'the field', is an implicit questioning of the ideology. This contrast crops out in our mathematics as two kinds of symbols—the kind like 1, 2, 3, x , y , z and the kind like $+$, $-$, $\div$, $\sqrt{\quad}$, $\log$ —though in view of 0, $\frac{1}{2}$, $\frac{3}{4}$, π , and others, perhaps no strict two-group classification holds. The two-group notion, however, is always present at the back of the thinking although often not overtly expressed.

Our Indian languages show that with a suitable grammar we may have intelligent sentences that cannot be broken into subjects and predicates. Any attempted breakup is a breakup of some English translation or paraphrase of the sentence, not of the Indian sentence itself. We might as well try to decompose a certain synthetic resin into celluloid and whiting because the resin can be imitated with celluloid and whiting. The

Algonquin language family, to which Shawnee belongs, does use a type of sentence like our subject and predicate but also gives prominence to the type shown by our examples in the text and in Fig. 2. To be sure, *ni-* is represented by a subject in the translation but means 'my' as well as 'I' and the sentence could be translated thus: 'My hand is pulling the branch aside.' Or *ni-* might be absent; if so, we should be apt to manufacture a subject, like 'he', 'it', 'somebody', or we could pick out for our English subject an idea corresponding to any one of the Shawnee elements.

When we come to Nootka, the sentence without subject or predicate is the only type. The term *predication* is used, but it means 'sentence'. Nootka has no parts of speech; the simplest utterance is a sentence, treating of some event or event-complex. Long sentences are sentences of sentences (complex sentences), not just sentences of words. In Figure 3 below, we have a simple, not a complex, Nootka sentence. The

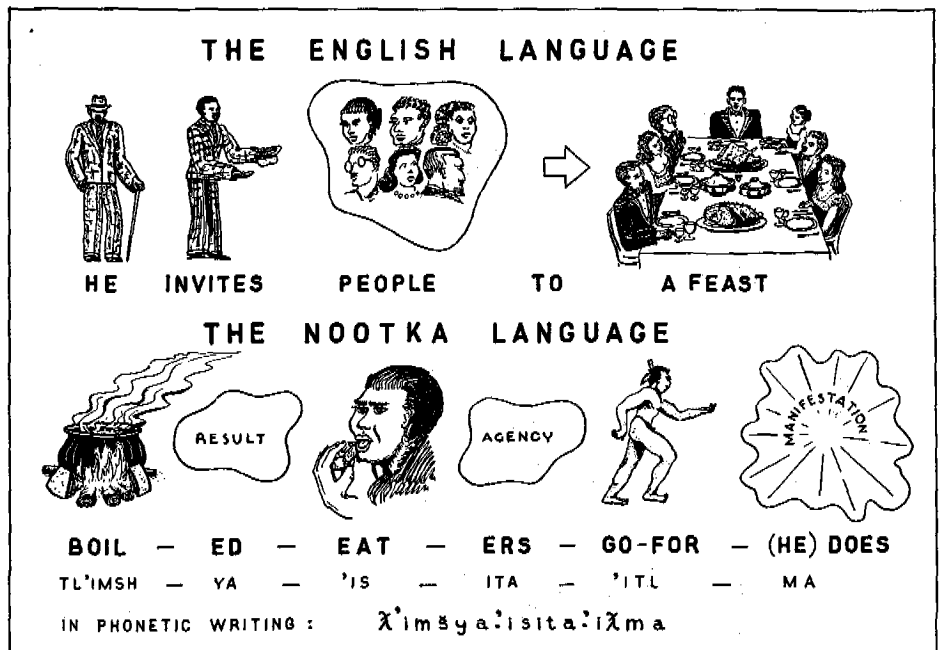


FIGURE 3.—Here are shown the different ways in which English and Nootka formulate the same event. The English sentence is divisible into subject and predicate; the Nootka sentence is not, yet it is complete and logical. Furthermore, the Nootka sentence is just one word, consisting of the root *tl'imsh* with five suffixes.

translation, 'he invites people to a feast,' splits into subject and predicate. Not so the native sentence. It begins with the event of boiling or cooking, *tl'imsh*; then comes *-ya* ('result') = cooked; then *-is* ('eating') = eating cooked food; then *-ita* ('those who do') = eaters of cooked food; then *-itl* ('going for'); then *-ma*, sign of third-person indicative, giving *tl'imshya'isita'itlma*, which answers to the crude paraphrase, 'he, or somebody goes for (invites) eaters of cooked food.'

The English technique of talking depends on the contrast of two artificial classes, substantives and verbs, and on the bipartitioned ideology of nature already discussed. Our normal sentence, unless imperative, must have some substantive before its verb, a requirement which corresponds to the philosophical and also naïve notion of an actor who produces an action. This last might not have been so if English had had thousands of verbs like 'hold', denoting positions. But most of our verbs follows a type of segmentation that isolates from nature what we call 'actions', that is, moving outlines.

Following majority rule, we therefore read action into every sentence, even into 'I hold it.' A moment's reflection will show that 'hold' is no action but a state of relative positions. Yet we think of it and even see it as an action because language formulates it in the same way as it formulates more numerous expressions, like 'I strike it,' which deal with movements and changes.

We are constantly reading into nature fictional acting-entities, simply because our verbs must have substantives in front of them. We have to say 'It flashed' or 'A light flashed,' setting up an actor, 'it' or 'light', to perform what we call an action, 'to flash'. Yet the flashing and the light are one and the same! The Hopi language reports the flash with a simple verb, *rehpi*; 'flash (occurred)'. There is no division into subject and predicate, not even a suffix like *-t* of Latin *tona-t* ('it thunders'). Hopi can and does have verbs without subjects, a fact which may give that tongue potentialities, probably never to be developed, as a logical system for understanding some aspects of the universe. Undoubtedly modern science, strongly reflecting western Indo-European tongues, often does as we all do, sees actions and forces where it sometimes might be better to see states. On the other hand, 'state' is a noun, and as such it enjoys the superior prestige traditionally attaching to the subject or thing class; therefore science is exceedingly ready to speak of states if permitted to manipulate the 'concept' like a noun. Perhaps, in place of the 'states' of an atom or of a dividing cell, it would be better if we could manipulate as readily a more verb-like 'concept' but without the concealed premises of actor and action.

I can sympathize with those who say, "Put it into plain, simple English," especially when they protest against the empty formalism of loading discourse with pseudo-learned words. But to restrict thinking to the patterns merely of English, and especially to those patterns which represent the acme of plainness in English, is to lose a power of thought which, once lost, can never be regained. It is the 'plainest' English which contains the greatest number of unconscious assumptions about nature. This is the trouble with schemes like Basic English, in which an eviscerated British English, with its concealed premises working harder than ever, is to be fobbed off on an unsuspecting world as the substance of 'pure Reason' itself. We handle even our plain English with much greater effect if we direct it from the vantage point of a multilingual awareness. For this reason I believe that those who envision a future world speaking only one tongue, whether English, German, Russian, or any other, hold a misguided ideal and would do the evolution of the human mind the greatest disservice. Western culture has made, through language, a provisional analysis of reality and, without correctives, holds resolutely to that analysis as final. The only correctives lie in all those other

tongues which by aeons of independent evolution have arrived at different, but equally logical, provisional analyses.

In a valuable paper on 'Modern Logic and the Task of the Natural Sciences,' Harold N. Lee says: 'Those sciences whose data are subject to quantitative measurement have been successfully developed because we know so little about order systems other than those exemplified in mathematics. We can say with certainty, however, that there are other kinds, for the advance of logic in the last half century has clearly indicated it. We may look for advances in many lines in sciences at present well founded if the advance of logic furnishes adequate knowledge of other order types. We may also look for many subjects of inquiry whose methods are not strictly scientific at the present time to become so when new order systems are available.'² To which may be added that an important field for the working out of new order systems, akin to, yet not identical with, present mathematics, lies in more penetrating investigation than has yet been made of languages remote in type from our own.

² *Sigma Xi Quarterly*, XXVIII (Autumn, 1940), 125.

AN AMATEUR SPECIALIST

A lesson can be read from the life of Benjamin Lee Whorf. His fellow-townsmen of Hartford, Conn., knew him as an executive in one of the city's many insurance companies. But throughout the nation anthropologists, paleontologists and archaeologists esteemed him as one of the inner circle who could decipher and interpret the mysterious writings that remain from the vanished Mayan, Aztec and Toltec civilizations of Central America.

In 1928, when a large part of the American public was concentrating its excess mental energies on crossword puzzles and its excess funds on the even more baffling phenomena of the stock market, Mr. Whorf took up the study of ancient manuscripts from Mexico and points south that had been gathering dust in New England libraries and museums. Soon his contributions to knowledge were recognized by learned societies, which welcomed him to membership. Grants and fellowships enabled him to pursue his studies in Mexican villages near the jungle ruins of bygone Indian grandeur. Yale honored him with fellowships.

*Yet throughout all this, and until his untimely death, this scientist continued his conventional calling in the world of business. Here is another instance of the amateur, who, by focusing his spare energies on some subject of fascination to him, rose above the humdrum of a daily chore, opened his eyes to new horizons and took pride in making a deposit in the growing field of human understanding.—Editorial from the *New York Times*, Tuesday, July 29, 1941.*

MECHANISMS OF MAGIC AND SELF-DECEPTION

THE PSYCHO-LOGICAL BASIS OF MISDIRECTION; AN EXTENSIONAL NON-ARISTOTELIAN METHOD FOR PREVENTION OF SELF-DECEPTION

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Magic is very old. Indeed, some of the earliest behavior of man cannot be distinguished as either religious, scientific or magical. A study of the history of magic reveals that the principles used by the ancient sorcerers and magicians are essentially similar to the basic psycho-logical principles utilized by conjurerers today. It is true that mechanical methods employed and goals achieved are entirely different, but the success of magic or conjuring depends primarily upon the ability of the sorcerer or conjurer to deceive the 'minds' of his audience.

In our present era, only the conjurer openly admits his deception: others continue to promulgate ancient deceits and demand recognition and authority for their intensional doctrines which confuse us with 'false knowledge', half-truths and erroneous beliefs.

In order better to comprehend the basic psycho-logical structure of deception, so that we may know how to attack the self-deception so prevalent in our daily actions and reactions, we must first study the psycho-logics of actual conjuring.¹

Long before the name *psychology* was on everybody's tongue, magicians employed certain of its principles under the term *misdirection*, and this is the technical word still in use. *Mis* is a prefix of Anglo-Saxon origin meaning 'wrong, bad, erroneous'; *misdirection*, therefore, means 'to give the wrong direction to'. While the artist in conjuring never hypnotizes his audience, not even in India, he accomplishes much the same results by his ability to create illusions by giving a wrong direction to their expectations and assumptions. By this means he can make his public fail to see what is in front of their very eyes, or believe that they see what is not there. Verily this is true magic!

The first requisite for successful misdirection is that the magician should hold the attention of his audience. Without close application on the part of the spectators, misdirection is almost an impossibility. The conjurer from the very onset has one great advantage in this respect, for his public, being eager to solve the trick, shrewdly watches every move of his hands, eyes, face and body. He also holds their interest by planning out each step of the effect as he would the plot of a play, so that detail follows upon detail in the expected sequence. When the spectators become intent upon the 'line of thought' mapped out for them, the performer can easily misdirect their 'senses' and perceptions, while unobserved he makes the key-moves upon which the success of the trick depends.

¹The author is indebted to the editor and publisher of the *Journal of Occupational Therapy and Rehabilitation* for permission to utilize material, principally in section II of this paper, which has already appeared in their publication. See Douglas M. Kelley, 'Conjuring as an Asset in Occupational Therapy,' XIX (1940), 71-108.

We all know that in everyday life, even when we are sober, we experience a variety of illusions. Who has not seen the bend in the stick when the end was plunged into water, or felt his train to be moving when it was really the train on the adjoining track, or watched the rapid apparent motion of the moon when fleecy clouds were scudding across its face? In fact, 'science' tells us that the whole universe is a mass of vibrating electrons from which we are continually abstracting, so we see nothing as 'it truly is'. These illusions may be due either to the physiology of the sense organs, such as the phenomenon of image retention, which is used as the basis of motion pictures, or to psycho-logical factors such as inattention, association, suggestion and imagination. But whatever the causes, all such errors are classed as normal as long as they are based upon objective stimuli of some sort and present some degree of the 'same' appearance to all individuals under similar circumstances. In conjuring, the illusions produced are of this normal type. To the psychiatrist, this psycho-logical side of magic is of particular interest for it gives him an opportunity to observe the illusory impulses of the sane. Each trick is really an experiment in the psycho-logics of illusions. From the moment the magician starts his performance, he is continually swaying the 'minds' of his whole audience by one form of misdirection or another, and is really juggling not so much with billiard balls and thimbles as with the 'senses' and perceptions of those before him.

II

The various methods of misdirection cannot be sharply distinguished, for they blend closely one into another, and often several types are employed at the same time, yet they may be easily classified into two main categories. In one of these I shall include all illusions based upon *misdirection of attention*, and in the other, those based upon *misdirection by camouflage*.

Misdirection of attention will be briefly discussed under the following three sub-heads: (1) diversion of attention; (2) distraction of attention; (3) relaxation of attention.

Diversion (Latin *divertere*, to turn aside) signifies 'turned aside from the present object'. As applied by the conjurer, diversion means that the onlooker's attention is turned away from that which is to be concealed, but attracted to some other point of interest. A skilled magician will soon have his entire audience so *en rapport* with him and so concentrated on what he is doing that they will unconsciously look where he looks, turn when he turns, relax when he appears casual, and consequently see only what he wishes them to 'see'.

There are a myriad of ways in which the attention may be diverted, but a few examples will suffice. For instance, when the artist guilelessly says, 'You see, there is nothing up my sleeve,' he is merely focussing your eyes upon his wrist. When he wishes some article brought upon or removed from the stage, he effectually conceals what is taking place by walking to the opposite side. Again, he may rivet audience attention upon some object on his table by discussing the use to which it will soon be put. And, for diverting attention, his wand is truly a 'magic stick' since all eyes will inevitably rest upon anything it touches.

The second type of misdirection of attention is distraction (from Latin *distrahere*, to draw asunder), and means the act of drawing the attention in different directions, or dividing it. In diversion the cause is milder, but the results more permanent, because the attention is completely turned aside to some other interest. In *distraction*, however, the attention remains divided between the original object and the thing that distracts. It is a well established 'law of psychology' that a person cannot attend to more than one thing at a time, and even when he appears to be doing so, his attention is really alternating with a marvelous degree of speed back and forth from one thing to the other. In the distractions employed by the conjurer, the eyes of the spectators are usually involuntarily drawn away by a sudden crash, a shot, a flash of light, the dropping of some object, or the entrance of an assistant at the crucial instant. The greatest variety of ways can be devised for thus gaining a momentary distraction. The intensity of the stimulus and the element of surprise will effectively attract the attention of the entire audience for a few seconds, during which the performer can accomplish some necessary move.

Relaxation of attention, like distraction, also reduces the degree of attention, but it accomplishes this not by dividing it but by lessening its intensity. This may be effected either by making an action appear utterly insignificant or by tiring the attention. Just as interest and variety stimulate, hold, and develop attention, so any monotonous repetition quickly wearies it. We all know how the continued activity of any sense stimulus, like the constant ticking of a clock, soon ceases to produce any appreciable effect. There are many degrees of this relaxation. A performer may reduce the alertness of his audience merely by appearing casual and indifferent and executing a movement as if it were of no importance at all. He may also lower their interest still more by repeating an operation several times, with the result that what finally occurs will go undetected. Again, the power of sustained attention may actually be fatigued. In India this is done by endlessly dragging out the performances by means of songs and the continuous beating of drums. Asiatic conjurers, with the exception of those of China and Japan, rely largely upon this deadening of the attention in order to conceal their secrets successfully.

The second main category of misdirection is not based upon interference with attention, and the 'senses' are allowed to perform their 'normal' function which is to report sensation. Instead, active and passive illusions, based upon misinterpretation of perceptions, are produced. I classify this second principle as *misdirection by camouflage*, subdivided according to the ways it is produced. In the first division, or *camouflage by simulation*, one will recognize the passive illusions, in which the starting point is without and the error arises *passively* from sense impressions and associated images; and in the second, or *camouflage by disguise*, one will discover the *active* illusions of misinterpretation.

The word *camouflage* originated from the French *camoufler*, which in theatrical parlance meant to make up or disguise, and the term became so popular during the first World War that it was used as a slang expression meaning 'faking' or 'faking', or figuratively, 'to put one off the scent' or 'to throw dust in the eyes'. Its present use is very similar to the word *feign*, which means to give an impression of something being so which is not so; and this is accomplished either positively by creating a false

assumption or negatively by concealment. This concealment, however, is not to be taken in the limited sense of hiding from view, but hiding by means of suggestive masking. Webster's Dictionary defines camouflage as 'any disguise, behavior, or expedient adopted to deceive or hide.' Though the term *camouflage* is in no way restricted to war, a brief glance at a few of the examples found in World War I will help one to distinguish more readily the two types in conjuring.

In the passive *camouflage by simulation* deception was achieved by a variety of counterfeits. Papier maché heads were used to detect the location of enemy snipers; dummy cows gave a peaceful aspect to a countryside infested with soldiers; or whole camps with guns, trenches and supply depots, were imitated to induce aircraft to waste bombs on counterfeits that appeared genuine even to the photographer's telescopic lens. In nature's ageless camouflage we also find innumerable instances of simulation; for example, many kinds of insects sham death for protection, and the mother quail noisily flutters ahead with an apparently broken wing in order to lure the prowling coyote or hunter from her nest. Here we have a feigned exhibition of what does not exist, or the seeming presence of what is absent. In the *active camouflage by disguise*, concealment was accomplished in countless ways: artillery was covered by an arbor of cut branches and leaves; supply trains were roofed with brown hay to blend with their surroundings when viewed from the air; merchant ships and destroyers were dazzle-painted to confuse the range-finder operators. In nature, disguise is equally common, as in the disappearing chameleon's constantly changing colors, or the leopard's spots which duplicate so well the jungle's shadows. In all these cases that which actually does exist is cloaked by clever suggestion, so that the wrong association of 'ideas' will cause a mis-interpretation of the facts.

III

Principles of misdirection utilized by a conjurer are entertaining, but employed by a speaker or an educator, etc., they result in the production of 'false knowledge', hasty generalizations, identifications, signal reactions, lack of predictability, etc., and these in turn breed 'insanity', or at least *un-sanity*. A psychotic delusion is merely a belief that is false-to-fact (the map does not fit the territory) which no ordinary appeal to 'reason' can modify or change. *Actual belief* in the apparent results of a conjurer's experiments would cause *suspensions of 'insanity'*, but such beliefs in the results of similar misdirection employed in other fields are generally accepted.

The success of misdirection depends upon the attention and intelligence of the subject. It is perhaps fair to assume that one must have some interest in a problem before he will seriously consider it, and one must have intelligence to pursue it with deep interest. Attentive, intelligent subjects, therefore, unless they are trained in non-aristotelian methodology and extensional procedures, may easily fall prey to the *expert in misdirection*.² Extensional investigators, however, although they may not

² The general semantics principles, methods and techniques of extensionalization as applied by the author in this part of his paper constitute the *modus operandi* of the non-aristotelian system of Alfred Korzybski as expounded in his seminars and in *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

understand the mechanisms utilized and may be puzzled, are not deceived. They realize that the only complete safeguard against such self-deception which aids in the forming of false notions is to know and understand the technical facts. Lacking these facts, they 'reason' by extensional methods and do not attempt to make their 'maps' fit unknown and not-understood 'territory', with the result that they limit their predictions and are not deceived in the end.

Of more practical interest for students of general semantics are the mechanisms of action and reaction in the major types of misdirection. Misdirection of *attention* is accomplished by diverting, distracting or relaxing attention so that the 'cortex' is unable to function properly because of interference or lack of adequate sensory perception. If attention is *diverted*, actions which are not observed can easily take place, and since the subject is unaware of their occurrence, he accepts the few things he has seen as 'all' of the facts, and consequently his ability to predict is blocked. With *distraction*, his attention, while not completely diverted, is divided, and he is unable to realize fully ('cortically' understand) what is taking place. Consequently he is unable to evaluate properly the facts or to predict the actual outcome. This same mechanism also underlies the principle of *relaxation* where fatigue instead of distraction causes an inability to adequately focus one's attention.

In the second major group, *camouflage*, we find that the subject's use of his 'cortex' is not blocked and signal (or 'thalamic') reactions are not so common. In this group there is mis-evaluation of facts resulting from the camouflage by *simulation* or by *disguise*. Here we find most important semantic relationships, since camouflage owes its successful action to the tendency of aristotelian 'thinkers' to generalize and to act upon the 'is of identity' and the 'is of predication'.

A general though unconscious belief in the three aristotelian 'laws of thought' plays a part of major importance in the success of such misdirection, since there is a general tendency to react in terms of those 'laws'. The 'law of identity', i.e. 'whatever is, is,' or 'a thing is what it is,' permits the use of the principle of simulation or camouflage by simulation. Consequently things which appear 'real' but are merely counterfeit are seized upon without adequate evaluation of the actual situation. A second law, the 'law of contradiction', i.e. 'a thing is not what it is not,' or 'whatever does not exist is non-existent,' is so firmly established in the beliefs of most men that we are able to employ camouflage by disguise. If we show an 'empty' box which contains false parts, the average individual, if the box *appears* empty, accepts it at its face value without considering other possibilities. This is because, according to his *methods* of evaluation, a box which *appears* empty *must be* empty, since 'whatever does not exist must be non-existent.' The third aristotelian law, the 'law of the excluded middle', i.e. 'a thing either exists or it does not exist,' or 'a thing cannot have contradictory characteristics,' is a combination of the two previous types of 'thinking' and permits both *disguise* and *simulation* to be utilized simultaneously. If a hat is faked with a false bottom it may be shown to be apparently empty by the camouflaged lining in the bottom. If it is then tossed about in a reckless fashion, it simulates an empty hat since nothing drops out. Since, according to the two-valued 'law of the excluded middle', an existent thing has certain 'properties' or does not have them, and since most people following this law expect to see objects if they are present in a

hat and expect them to fall out when it is inverted, they are easily fooled by the misdirection employed and consequently are unable to predict the appearance of the rabbit which is eventually drawn forth by the conjurer.

The aristotelian type of orientation underlies the ancient maxim 'seeing is believing' and results in low predictability. This lack of predictability is what produces the surprises in a conjuring act, which on a stage represents entertainment. Any of these psycho-logical principles based on archaic beliefs, however, may be employed for other purposes, and particularly in the use of language do we find this to be so. Such principles of misdirection form the basis of Hitler's propaganda as can be shown by numerous examples and quotations from his *Mein Kampf*.³ Likewise, many of our leaders sway audiences and lead us about like sheep because like the conjurer they can count on these types of reactions which follow the aristotelian assumptions, etc.

In studying propaganda, we find that since propaganda represents an attempt 'to control the attitude of groups of individuals through the use of suggestion', the principles of misdirection are essential for its success. As Doob points out, through distortion and suppression (*misdirection of attention*) favorable attitudes are aroused and through fabrication (*misdirection by camouflage*) necessary additions to the campaign are supplied.⁴

Hitler has written, 'For to lead means to be able to move masses,' and by skilful misdirection, he and his henchmen have to a great degree been successful in developing propaganda that has not searched into 'truths' favorable to others but has rather served well 'its own "truth" uninterruptedly'.

Such propaganda owes its success to the fact that, as Hitler has cleverly put it, 'people in an overwhelming majority, are so feminine in their nature and attitude that their activities and thoughts are motivated less by sober consideration than by feeling and sentiment.' This 'knowledge of the primitiveness of feeling of the great masses' is not a discovery of Hitler. It is based on the predominance of thalamic reactions over cortical ones. When men become confused and by misdirection are led to believe 'half truths', 'emotional' outbursts take the place of 'intelligent' evaluation.

Propagandists have long realized that the majority of people 'emotionally' confuse (identify) 'map with territory,' and being ignorant of the process of abstracting, evaluate 'the word' as if it were 'the thing'. This is a most primitive failing; we know that in the ancient Egyptian languages, names and words were considered 'the objective manifestations of the objective nature of the things'. As Lutz has pointed out, 'They (word and thought) never reached a stage in which the two could be totally freed from sense perception.'⁵

If in our own times such confusion (identification) still exists among the people, and we know it does to an alarming extent, anyone skilled in the manipulation of 'words' can deceive the masses in regard to the actual condition of 'things' and can produce 'emotional' shifts at will. All that seems necessary to bring about such thal-

³ Adolph Hitler, *Mein Kampf* (New York: Reynal and Hitchcock, 1939).

⁴ See Leonard W. Doob, *Propaganda* (New York: Henry Holt and Co., 1935).

⁵ Henry F. Lutz, 'Speech Consciousness among Egyptians and Babylonians,' *Osiris*, II (1936), 1-27.

amicably controlled mass action is propaganda based on misdirection and aimed at the basic and auxiliary 'emotional' drives inherent in human beings.

IV

At present the most efficient methods which we have of actively overcoming such misdirection are the principles involved in extensional evaluation and Korzybski's non-aristotelian system. If we employ the linguistic revisions consistent with general semantics, and if when we 'see' unknown phenomena, we attempt to evaluate extensionally—when possible by investigation of facts, or in any case by using the extensional devices (indexes, dates, the etc., quotes, and hyphens) in 'thinking' about what we 'see'—we shall not be so easily misled.

For example, a magic wand may appear solid and sturdy, but may be made up of a number of sections held together by a piece of cord under tension which when relaxed permits the entire wand to fall apart. Simple observation yields only the fact that the wand appears straight and stiff (camouflage by disguise) and rapping the wand on the table produces a sound of two solid objects struck together (camouflage by simulation). If, then, our attention is diverted from the careful examination of the wand by the patter or actions of the conjurer, we will be surprised when he loosens it and it collapses. This little example clearly indicates the need of careful observation and the refusal to accept absolutely the 'facts' conveyed to us by our 'senses' until we are able to ascertain their extensional value. The wand apparently 'looks' solid, and so we follow the *is of identity* and say, 'the wand is a solid wand,' instead of saying, 'It appears as if it were solid.' We then reason that since it 'is' a solid wand it will be strong (*is of predication*) and we will consequently be surprised (*lack of predictability*) when it collapses.

In the wand, as seen, we have a map which simulates but does not adequately represent the territory (it is not *similar in structure*). Until we have actually investigated its structure we must say, only, "It is called a wand, but it is a wand which I have never seen before. It *appears* to be solid and it *sounds as if* it were solid, but by extensional evaluation it may only appear to be solid and since I know nothing more about it, I can only claim that it *might* be solid and again it might not.'

At this point the magician may mention in his patter that 'it is a solid wand,' and were I to accept his authority again I would be misled. This is another important point, for authority is one of the major substitutes for investigation and so adequate evaluation. The authority of famous men, of the church, of other institutions and of the printed and spoken word are so great that multitudes of men follow them without question. If we question these authorities extensionally, we will find our predictability increasing, for we then can say, 'He says that it is a solid wand. It even appears as if it were a solid wand, but it may not be. I question his authority, and again it may or may not be solid.' The final method of determination is strict adherence to the rules of extensional methodology and careful examination of the facts. Our orientations are then not absolutistic but based on degrees of probability and so facilitate proper evaluation and maximum predictability.

Countless other examples might be given from sources of everyday life, but the above clearly shows how the principles of misdirection function, and how extensional methods based on non-aristotelian orientations can prevent self-deception. I leave it to you to uncover the types of misdirection employed by those with whom you are in contact, and urge an extensional attack to gain maximum predictability, and to prevent mis-evaluations, *un-sane* reactions, and so maladjustive behavior.

SCIENCE — THE MODERN TOTEM-POLE

EDITOR'S NOTE: The authors of this Congress paper are HUGH GRAY LIEBER, Head of the Mathematics Department and LILLIAN R. LIEBER, Ph.D., Director of the Galois Institute, Long Island University, Brooklyn, New York. They are co-authors of the unique Modern Mathematical Series: (1) *Non-euclidean Geometry or Three Moons in Mathesis*, (2) *Galois and the Theory of Groups*, (3) *The Einstein Theory of Relativity*, etc. This series is printed by the Science Press in somewhat the same fashion as we use here in presenting their paper.

'Science—the Modern Totem-Pole' will be one chapter in the Lieber's latest volume, *The Education of T.C. Mits*, to be published in the autumn of 1942. The Hero's' name is formed by the first letters of each of the words: *The Celebrated Man In The Street*.

As further introduction to this paper, we quote a few lines from the opening chapter of *The Education of T.C. Mits*:

*T.C. is born and gets
An education of some kind
He picks up a lot of
Contradictory information
He is naturally confused by all this
This book is an attempt
To get a bird's-eye view
Of T.C.'s predicament
And to look for
A possible egress.*

*To do this
VIVIDLY
We use pictures whenever possible.
And
To do it
CLEARLY,
We use the clearest language
Man has invented:
Mathematics.*

*Oh, we know you do not like
Mathematics,
But
We promise not to
Use it as an instrument of torture,*

*But to show
What bearing it may have
On the contradictory advice
Mentioned above,
As well as on such things as:
Democracy
Freedom and License
Pride and Prejudice
Success*

*Isolationism
Preparedness
Tradition*

*Progress
Idealism
Common Sense
Human Nature
War*

*Self-reliance
Humility
Tolerance
Provincialism
Anarchy
Loyalty
Abstract Art
And so on. . . .*

★ ★ ★

*In recent times
Science has often been blamed
For the success of Hitler,
And some people maintain that
Science is, at best,
An a-moral force which
Cannot possibly guide us to
The good life.
Now it is our thesis here*

*To show that Science can
Not only protect us from
Floods and lightning and disease,
And other such physical dangers,
But has within it
A PHILOSOPHY which
Can protect us from
The errors of our own loose thinking,
And thus can be*

A veritable defense against All Evil—
 A Totem-Pole—
 If we would but examine into it
 Carefully.

Let us symbolize our Totem-Pole by
 A column made up of
 The five well-known regular solids,
 As shown in the sketch.
 And let us think of the solids as
 Separate rooms, in each of which
 A certain aspect of Science is
 presented.
 We shall now take you
 On a guided tour of these rooms.

The first floor, the Cube,
 Contains all the scientific gadgets
 With which we are all so familiar:
 Automobiles and refrigerators and
 radios,
 And what seems like
 Googols† of others.
 This of course is also the room in
 which
 You will find tanks and bombers and
 All the paraphernalia of war.
 And this is why some people say that
 Science is a-moral,
 Since it produces,
 With equal indifference,
 The peaceful toys we enjoy so much
 As well as the instruments of
 destruction.

† A 'googol' is a very large number,
 Namely 10^{100} , or 1 with a hundred zeros
 after it;

The term *googol* was invented in fun by
 A nephew of one of our great American
 mathematicians,
 Professor Edward Kasner of Columbia Uni-
 versity;

It is becoming a popular word and
 Will doubtless soon be in the dictionary.

But these people have probably never
 Climbed the magic staircase which
 leads

From the Gadget Room
 Up into the other rooms of
 Our Totem-Pole,
 And are entirely unfamiliar with
 Their contents.
 Let us therefore go up to
 The Second Floor, the Icosahedron.
 Here we find

A great industrial laboratory—
 This is where the gadgets are
 Invented, tried out, manufactured.
 The men working on this level
 Are not advertising and selling,
 They are inventing.
 They are told by the people who hire
 them:

'We want a brighter light,
 A cheaper light,
 A smoother-running car,
 An effective defroster for airplanes,
 . . . ,

And a thousand and one other things.
 These research men do not
 Let their minds roam around
 Looking for interesting problems;
 Their problems are handed to them,
 And they must solve them within
 A very reasonable length of time,
 'Or else'.

Only 'practical' men are wanted here;
 And not over-sentimental ones:
 For they may be told at any moment
 To find effective ways of
 Killing people,—
 They must make
 The best long-range guns,
 The best poison gases,
 The bombs which can

Destroy the most people.
 But you thought we promised
 To get away from all this
 As we climbed upward!
 And yet this floor seems to have
 Even more diabolical possibilities
 Than the first one.
 Perhaps if this second floor were
 destroyed,
 The war paraphernalia of the first
 floor might
 Become obsolete and die out
 Of its own accord.
 Are not these scientific inventors
 The real devils after all?

But let us climb another flight
 And see what goes on in
 The Octahedron.

These men are doing research in
 'Pure' science.
 They are not employed by manufac-
 turers
 Or by governments,
 They are usually professors at univer-
 sities
 Who select their own problems
 Because they are interested in them.
 They are not concerned with
 Any practical applications of their
 ideas.
 These are the theoretical men—
 They ask the most 'useless' questions:
 For instance,
 'What happens when you mix
 Sugar and water and lemon?'
 They call it *Sugar Hydrolysis* instead
 of *Lemonade*.
 They study it in different solutions
 Carefully varying the relative
 amounts of

The substances involved,
 And examine them with a polariscope
 For days and days, and years and
 years,
 Keeping careful records
 And publishing the results in
 Scientific journals.
 Will these investigations make them
 rich?
 Or fat?
 Or benefit them in any 'practical'
 way?
 Not at all.
 Then why do they do it?
 The answer is that
 They are just driven by
 Curiosity.
 Once in a while they are consulted by
 The men on the second floor,
 But not so very often.
 Usually they just write up their results
 And die without knowing whether
 These will ever have any practical use.
 But the fact is that
 Their results ARE very often,
 In the long run,
 Used by some second floor scientist.
 Indeed,
 These second story men find that
 They must study the work of
 The 'pure' scientists
 Constantly,
 But usually it is the work of
 The 'pure' ones of the past,
 Work which has already found its way
 Into the text-books which they have
 studied at
 The institutes of technology,
 Rather than the current work pub-
 lished in
 The journals of pure science.

In fact,
 The gentlemen working at any given
 time
 On the second and third floors
 Seem to have very little in common:
 The second floor men consider
 The upper floor men to be
 'Wild-eyed, absent-minded college
 professors;
 Some of them are perhaps just
 Crackpots,
 Who knows?
 It is safer to go to the theory of
 The established past,
 Which has been duly tried and tested.'
 And, on the other hand,
 The inhabitants of the third floor
 Look down upon the second story men,
 Considering them to be mere
 'Hirelings and ignoramuses',
 And prefer to leave their results to
 The second story men of the
 FUTURE,
 'Who will be in a better position to
 Appreciate them'.

But, granting even that this will be so,
 What guarantee have we that
 The uses that their ideas will find
 WILL be decent, moral uses?
 How do we know that
 They are not storing up
 Just a lot of additional trouble for
 The unfortunate future generations?
 No,
 Let us climb up further,
 And look at the Fourth Floor, the
 Dodecahedron.

Here we find
 The mathematicians—

Not the 'pure' mathematicians,
 For they live on the Fifth Floor,
 In the Tetrahedron Garret,
 With the modern artists—
 The fourth floor mathematicians are
 The ones who know
 The classical mathematics of the past
 And apply it to
 The scientific findings of
 The 'pure' scientists of the third floor.
 They take this scientific data
 And organize it
 And study it with
 All the mathematical machinery
 At their command.
 If a second story man ever
 Happens in on the fourth floor,
 Which is very rare,
 He can hardly control his laughter,
 These men seem to him to be
 Even more wild-eyed than those
 On the floor below,
 But the guide tells him:
 'You ain't seen nothin' yet,
 Wait till you see the Top Floor,
 The Tetrahedron.'
 At least on this fourth floor,
 You hear them mention
 Geometry and algebra and calculus,
 Subjects you have heard about
 In high school or in college,
 But on that Top Floor,
 They draw geometric figures on
 Doughnuts and pretzels
 (No fooling!)
 And on rubber sheets,
 And they have up there
 Algebras and arithmetics in which
 Twice two is NOT four!
 In which $3 + 2$ does NOT give
 The same answer as $2 + 3$,

Nor is 5×6 equal to 6×5 !!
 They are indeed fit companions
 For the modern artists
 Who share the garret with them.
 They are lucky if they can even
 Get a job,
 And yet the connoisseurs say that
 Their work is tremendously important
 for
 The future.
 Indeed,
 If you trace back some of
 The most practical and useful gadgets,
 You will find that
 If it had not been for
 A series of 'wild-eyed,' 'impractical'
 men,
 These gadgets could not exist to-day.
 Take the radio for example,
 With all its variety of
 Concerts and important broadcasts of
 all kinds.
 Trace it to the second floor
 And you will find that
 Many men on that floor
 Have been improving reception by
 Inventing better tubes and aërials, etc.
 But all this could not have happened,
 Had it not been for
 A man named Marconi,
 A second story man,
 Who sent the first crude radio
 messages;
 And even his work
 Would have been impossible,
 Had it not been for
 Another man, named Hertz,
 Who worked on the third floor,
 And who proved that
 The very idea of sending a wireless
 message

Was actually possible,
 Since he demonstrated the existence of
 Electromagnetic waves;
 But where did he get the idea of
 Even looking for these waves?
 Why, from a fourth floor man, of
 course,
 A man named Clerk Maxwell,
 Who first conceived the idea of
 waves in
 An 'electromagnetic field' and
 Applied the calculus to it, obtaining
 A set of differential equations
 From which he declared the conse-
 quence followed
 That there MUST be
 Electromagnetic waves;
 And, as we have already said,
 Hertz subsequently proved that he was
 right.
 And, obviously,
 Maxwell could not have done his job
 Had not Newton invented the calculus.

And so it goes.

Take any gadget you like
 And trace it back,
 And you will find that
 Invariably you will have to
 Go up into
 All the five floors,
 Before you can have its complete
 story.

'But,' you will say,
 'You have not proved your initial point
 At all,
 Since the same is true of
 Tanks and bombers also,
 And therefore,

Science IS indifferent to
Good and Evil,
And IS a-moral after all.'

You will soon admit however,
If you read again
The story we have told you,
More attentively this time,
That Science is trying to
Tell you something else,
If you will but listen.
For instance,
Go back and you will see that
In the little story of the radio,
There are
Americans,
Italians,
Germans,
Englishmen.
If you take the airplane,
You will also find
Russians,
Frenchmen,
And others.
In short you will be very much
impressed
By the fact that
SCIENCE IS INTERNATIONAL,
That it is trying to tell us that
Hitler's racial theories are utterly
false.
It is also trying to tell us—
If we would only listen—
That co-operation is essential
For accomplishing things,
That it is really absurd
For the first and second story men
To laugh at those who live upstairs,
Or for the latter
To look down upon the others.
For they are all needed

To do the job.
Is not this DEMOCRACY?

And Science again shows us
That Hitler is wrong,
For he is encouraging, at best,
The work on the two lower floors only,
Since he has thrown out
The three upper floors of
The Totem-Pole—
And is running around like
A chicken with its head cut off.
You can easily see that
This CANNOT last!
And if we had the time
To tell you more about
Those strange
Algebras and geometries we men-
tioned,
You would see that
Mathematics has many important
messages
For us,
That it is trying to tell us that
VARIOUS mathematical systems are
possible,
That they are all man-made
And controllable by man,
And that
If you apply this idea
To the social world,
You will realize that
It is up to you
To build a good world if you want
one—
That man has a great deal more
Freedom and creative ability than
He is sometimes aware of.
The idea of a fixed 'human nature' that
Has us by the throat
Is just a fiction,

For
The activities on the Top Floor
Are trying to tell us that
HUMAN NATURE HAS INFINITE
POSSIBILITIES.

In short,
It is not the guns and tanks
Which are the real evils—
For a gun may be a great 'good'
Under certain circumstances—
But rather
Such false IDEAS as
'Nationalism',
'Dictatorship',
Narrow views of
'Human Nature', etc.,
Are the real DEVILS.
Thus
FALSE IDEAS ARE MORE
DANGEROUS THAN GUNS!!
Guns and tanks are mere tools,
They may be used for good or evil,
But they are only
First floor gadgets,
Whereas the philosophy of science,
Which comes from
A contemplation of all the floors,
And of their relationship to each other,
Has for us
Unmistakable messages.
If Hitler were intelligent enough
To get up from
The first and second floors
He would understand that
His program
Cannot possibly fit the human race,
Whose nature is so beautifully
revealed
By a study of science as a whole,
Which, as we have seen,

Has internationalism and democracy
At its very heart.

We therefore advocate:

- (1) A broader view of Science which
Enables us to appreciate the
Philosophy in it—
Science as a whole,
As seen in the Totem-Pole,
Can really protect us from evil.
- (2) A more appreciative attitude
toward
The Top Floor men.
By knowing how much we owe
To the top floor men of the past,
We should stop treating them
with
The brutality with which they
have been treated
In the past—
Just because they do not use their
energy to
Make themselves physically com-
fortable—
And we should stop heckling them
By asking them:
'What is the practical use of
What you are doing?'
Or
'What does this mean for the
average man?'
Since the truth is that
They themselves do not know.
Their work is as much
A 'Natural Phenomenon' as
A natural oil-well or
Natural gas or
Mountains or
Rivers.
Let us give them the
Freedom they need

To do what is in them to do.
Let us turn their garret into a
Penthouse,
And marvel at their strange products.
Perhaps some day we shall find
A 'practical' use for them,
As has so often happened in the past.

And besides,
Their present philosophical impli-
cations
Already make them invaluable to us
NOW—
As we pointed out above.

FROM CLASSICAL PHYSICAL TO MODERN SCIENTIFIC ASSUMPTIONS

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TYPES OF ORIENTATION

One of the most fundamental formulations presented in general semantics is the doctrine that the world-picture of the aristotelian-euclidean-newtonian synthesis forms one orientation, while the new formulations, the non-aristotelian, non-euclidean and non-newtonian systems, present more general orientations. According to Korzybski's formulation the newer systems not only supersede but are more general and include within themselves, the older orientations. Following this formulation, we preserve the best of past science and put into practice Korzybski's teaching about the desirability of time-binding syntheses.

In Korzybski's own words:

The newer systems, as, for instance, the $\bar{E}$, $\bar{N}$, and the present corresponding $\bar{A}$ -system, are *more general*: which means that the newer systems include the older as particular cases . . .¹

If we compare the systems of Aristotle, Euclid, and Newton, designated A , E , N , respectively, in Figure 1, with the non-aristotelian, non-euclidean and non-newtonian systems, designated $\bar{A}$, $\bar{E}$, $\bar{N}$, a very important fact should be noticed; namely, that the $\bar{A} \bar{E} \bar{N}$ trilogy is more general than $A E N$. This fact has far-reaching semantic and practical consequences and perhaps can be best explained by the aid of a diagram. We see that the $\bar{A} \bar{E} \bar{N}$ trilogy includes the $A E N$ trilogy as a particular case. . . .²

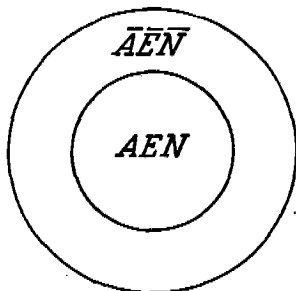


FIGURE 1

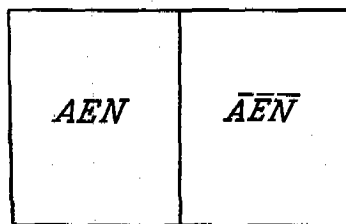


FIGURE 2

It will be noted that in Korzybski's diagram (Figure 1) there are two circles representing the two trilogies, and that the second circle surrounds the earlier and less

¹See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941), p. 27.

²*Ibid.*, p. 7.

general view of nature. It will also be noted, however, that if one diagrams the situation as we have indicated in Figure 2, the two systems are external to each other, mutually exclusive, and therefore the latter system does not include the earlier. This means that the preference for the representation given in Figure 1 must be justified by a demonstration which appeals to the facts, showing that the older orientation can be included as a particular case of the wider, later and more general system. The validity of Korzybski's thesis must rest not upon diagrams (maps), but upon a factual basis, since maps merely represent, they do not create, facts of relationship. This demonstration that Figure 1 represents the correct map, and Figure 2 the incorrect map, has never been given in its entirety. The aim, therefore, of the present paper is to present this demonstration as convincingly as possible.

THE TRADITIONAL APPROACH

Our first aim is to show that classical science, or the traditional theory of nature, is an exfoliation of the aristotelian-euclidean-newtonian formulations. In their origin these classical systems were derived from Greek 'thought' and reached first fruition in the newtonian-laplacian particle-picture of nature. From Greek science and philosophy the classical theory took over the notions of Greek materialism (*atoms* and *void*, as the only two 'realities'); from aristotelian logic the notion of *substance* as the subject of predication; to these were later added Descartes' notion of *matter* (*res extensa*) and *movement* as the elements of the physical world, and Galileo's formulation of *inertia*. All these notions, resting on certain unconscious assumptions about nature and crystallized into prevalent 'habits of thought' were then expressed through the grammatical and linguistic patterns of Indo-European science and philosophy and exalted into the ultimate 'laws' of 'reason' and nature! Little wonder that the new discoveries of quantum and relativity theories came as a 'revolution', a series of astounding discoveries which shook to their foundations all our views of what is 'natural' and 'rational' in nature!

Put all these notions together, pare and prune and splice them as needs be to attain the measure of coherence that science strives for, and you come out with the structure of that system of nature which we shall hereafter term the traditional or classical system of science. The outlines of this schematism have been presented by Albert Einstein and Leopold Infeld in their book on *The Evolution of Physics*,³ and by many other students of the history of physical science. The most fundamental assumptions of this classical scientific world-view may be summarized as follows.

THE ASSUMPTIONS OF CLASSICAL SCIENCE

1. *Space and time are the vessels or containers into which 'matter' can be put.* On this view space and time can exist before matter was created.
2. *Space and time are absolute; they are separate and independent realities.* As Newton says in his famous *Principia* (Book I):

³ Albert Einstein and Leopold Infeld, *The Evolution of Physics* (New York: Simon and Schuster, 1938).

Absolute, True, and Mathematical Time, of itself, and from its own nature flows equably without regard to anything external, and by another name is called Duration; . . .

Absolute Space, in its own nature, without regard to anything external, remains always similar and immovable. . . .

Absolute Motion is the translation of a body from one absolute place to another; . . .⁴

According to this view, velocity is equal to the increment of space divided by an increment of time. Acceleration is an increment of velocity divided by an increment of time. Force is mass times acceleration. And so on. Thus we eventually build up that unified system of physics which was embodied in all standard textbooks of physics, mechanics and engineering.

3. *At any given instant of time any 'thing' is what it is, and it is where it is (in space).* Matter (i.e. any 'particle' or 'aggregate of particles') occupies space and resists occupancy of that 'same' space by any other thing of the same sort (e.g. atoms are impenetrable to other atoms, molecules to other molecules, etc.).

4. *Matter has primary qualities only, and secondary qualities are subjective in origin.* This doctrine of the objectivity of what came to be called 'primary qualities' (in the physical world) and the subjectivity of secondary qualities was an essential part of traditional scientific theory. Here are some important statements of this view, arranged in historical order.

Democritus: Sweet and bitter, cold and warm as well as the colors, all these things exist but in opinion and not in reality; whatever really exists are unchangeable particles, atoms and their motions in empty space.

Galileo: White or red, bitter or sweet, sounding or silent, sweet-smelling or evil-smelling are names for certain effects upon sense-organs; they can no more be ascribed to the external objects than can the tickling or the pain caused sometimes by touching such objects.

Newton: Speaking of the colors produced by his prism which broke up white light into its monochromatic constituents, Newton says: 'The rays, to speak properly, are not colored.' According to Newton, all that exists are vibrations of various frequencies. (It must not be forgotten, however, that Newton also advocated the corpuscular theory of light.)

Locke: Locke held that the primary qualities are *extension*, *shape* (i.e. geometrical properties), *solidity* and *motion*. Following Newton's teaching that an unchangeable mass was associated with every object, Locke added *mass* to the list of primary qualities. According to Locke, secondary qualities are those 'which in truth are nothing in the objects themselves, but powers to produce various sensations in us by their primary qualities.'

Descartes: The cartesian view is that the only primary qualities are *extension* and *motion in space*. Give me space and movement and I will create the universe, exclaims Descartes.

5. *Matter is inert and passive; it has no power within itself to initiate movement.*

⁴ Newton, like Galileo, recognized a kind of relativity, a relativity expressed in the omitted sections of the above quotations. For Newton, 'relative spaces' and 'relative times' were merely the 'sensible measures' of absolute, true and mathematical space and time. For a discussion of galilean and newtonian relativity see such volumes as E. Cunningham's *Relativity, the Electron Theory and Gravitation* (London: Longmans, Green and Co., 1921).

This belief is an integral part of Galileo's principle of inertia, which Newton accepted and built upon. Moreover, matter (mass and inertia) is indestructible, absolute and invariable.

6. *The universe is a 3 + 1 manifold of space and time.* The position of a particle (e.g. an atom) or a piece of matter (e.g. a rock or a star) can be determined at any given instant of time by means of its three co-ordinates (of cartesian geometry). As time varies the path of the particle through space can be traced and represented mathematically by variations in values of the three spatial co-ordinates. In other words, in order that any object can get from one place to another it must move through the intervening distance (space) and it must take some time to do this (depending on the velocity). This does not contradict the theory of 'action at a distance' of newtonian forces, acting with an 'infinite velocity', as we shall see later.

7. *The same thing cannot be in two different places at the same time, and two different things cannot occupy the same space at the same time.*

8. *The same thing or event can be observed from two different points of view at the same time; and two different events can happen at the same time (i.e. simultaneously), and they can be observed as simultaneous.* In brief, simultaneity has an absolute meaning.

9. *Force is the active cause of the motions of matter.* Here both Aristotle and Newton agree, though they differ on the precise criterion (measure) of 'force'.

Aristotle says: 'The moving body comes to a standstill when the force which pushes it along can no longer so act as to push it.'

Newton says: 'Every body perseveres in its state of rest, or of uniform motion in a straight line, unless it is compelled to change that state by forces impressed thereon. The alteration of motion is ever proportional to the motive force impressed. . . .'

It will be noted that the difference between Aristotle's and Newton's notions of force is that Aristotle believed that any body which continued in a state of uniform motion was acted upon by a force, whereas Newton, following Galileo, held that it was change of velocity (acceleration) which was indicative of an impressed force. Aristotle's law took no account of accelerated motion.

For Aristotle God was the First Cause, the Unmoved Mover of the universe. Aristotle needed God because motion was not natural, i.e. it needed explanation. For Newton motion was natural—that is, self-explanatory; and it was *change* of motion which needed explanation. Newton did not need Aristotle's Unmoved Mover; he needed God as the Creator of the original particles which were inserted into the world of space; he needed God as the Being whose existence provided the Absolute Structure of the Space and Time of the Universe.

10. *The universe obeys a principle of uniform causality; predictability is possible in science because of absolute determinism in the physical world.* This notion appears in its best form in the laplacian notion of the 'Infinite Calculator' who could anticipate the entire future of the universe.

THE RELIGIOUS BACKGROUND OF CLASSICAL SCIENCE

It is evident from the preceding remarks that classical science, which began its modern career in the seventeenth century and survived until the beginning of the

twentieth century, was developed within the framework of theology and religion. Whether the views developed were deliberately elaborated as a part of metaphysical dogma (e.g. the 'music of the spheres' of Kepler's astrological science) or unconsciously influenced by prevailing theistic doctrines, or enunciated as *reactions against* religious interpretations (e.g. the materialism of Gassendi and Hobbes, or the Deism of John Locke, Thomas Jefferson, and others)—in any of these cases the influence of religious ideology was there just the same, helping to determine the course of scientific formulations. But more specifically, there are two ways in which this religious influence manifested itself in the 'natural philosophy' of early modern science, namely, in the notion of the *character of scientific law* and in the *formulation of space and time* taken as the pervasive framework of nature.

With respect to the first consequence, as Dilthey has remarked, the founders of early modern physics shared with Pythagoras the belief in a cosmos ordered according to the highest and most perfect mathematical laws, expressing a divine reason behind nature. It is not surprising that it was astronomy and physics which fixed in modern science the notion that 'God geometrizes', and does so only in accordance with the 'logic' and mathematics of the pythagorean-platonic-aristotelian-euclidean systems of fixed and final patterns of number, form and ratio embodied in the geometrical patterns of nature. The later galilean-cartesian-newtonian-laplacian nature-science thus merely restates the absolute and unique geometry of Pythagoras and Euclid in terms of mathematical-mechanical laws or formulae.

With respect to the second influence of a religious metaphysics upon early modern scientific theories, we may here quote the words of Hermann Weyl, who states clearly the reasons for Newton's theory of the absolute structure of space and time. As Professor Weyl explains:

At the beginning of his *Principia*, Newton proclaims with perfect clarity absolute space and absolute time as the entities that are *a priori* at the bottom of all laws of nature. If one asks how Newton could embrace this dogma although he adopts the empiristic program of deriving the actual run of the strata and fibers of the world according to space and time from their effects on the observable events, the answer to my mind lies chiefly in his theology, the theology of Henry More. Space is to him *sensorium Dei*, the divine omnipresence in all things. Therefore the structure of space behaves with regard to things as one would naturally imagine the behavior of an absolute God toward the world: the world is submitted to his action, but he himself is beyond the influence of any action from the world. . . . In his doctrine about the center of the world and the position of the sun among the fixed stars, for example, he [Newton] is considerably more Aristotelian and less modern than Giordano Bruno who precedes him by more than a century.⁵

From this it is clear that Newton took over the theological-metaphysical notions of space and time which permeated the intellectual atmosphere of Cambridge University. Men like Henry More, who influenced Newton's views on these matters, were declaring that space and time were 'nothing but the omnipresence and eternal duration of God', thus deifying the framework of nature as the matrix of divine presence. It is no wonder, therefore, that Newton in the 'General Scholium' to the *Principia*

⁵ Hermann Weyl, *The Open World* (New Haven: Yale University Press, 1932), p. 18.

should exclaim: 'By existing always and everywhere God constitutes duration and space.' Thus do space and time manifest themselves as the 'sensorium of God'.⁶

This notion of absolute time and space, as the 'sensorium of God', made it possible on the newtonian theory to define an instant of time unambiguously for the entire universe (i.e. independently of the co-ordinate system). This renders it intelligible to seek to determine whether two events, occurring on different planets, for example, are happening simultaneously. The newtonian formulation of action is based on the notion that force can be transmitted instantaneously through space (or with an 'infinite velocity'). In the words of Frenkel:

After all, how can you ascertain that two events taking place in different places, on different planets, for instance, are simultaneous? Only through some action coming from these two planets, and such action need not be the action of light: it is sufficient to assume that there is *some* action which can be transmitted from these two planets to the earth simultaneously. If such action existed we should theoretically be able to justify the notion of simultaneity as applied to events in different points of space.

Now, this is exactly the Newtonian and post-Newtonian notions about the transmission of forces through space. It was thought until the second half of the nineteenth century that forces could be transmitted instantaneously through space. We are so used to this notion that we don't even notice how it slips into our arguments. When a physicist talks about the force of interaction between two bodies, as determined by the relative position of these bodies, he fails even to mention that he thinks of simultaneous position. He considers this simultaneity as something self-understood.

When he thinks, for instance, of the action which the earth experiences from the sun, the moon and the other planets, he usually assumes that this action depends upon the simultaneous position of all the other celestial bodies. He thus assumes that this action is propagated through space instantaneously. It is this idea of the action at a distance which is propagated through space with an infinite velocity that forms the basis of the assumption that simultaneity can be unambiguously defined. If you can theoretically imagine that the whole world can be embraced by some sort of action at a certain instant of time, then it is reasonable to talk of simultaneity as of something definite, which is independent of the choice of the frame of reference.

This idea of force, as propagated instantly through space, was developed with the newtonian theory of gravitation as a model for forces of all other kinds. It was assumed that gravity was a force acting at a distance through empty space and transmitted with infinite velocity. Newton did not attempt to understand the nature of gravitation.⁷

As Professor Frenkel points out, Newton made no effort to form a physical hypothesis to 'explain' gravitation. However, without any intended disrespect, it may well be said that Newton left this up to God. Thus in his work on *Opticks* we find Newton declaring that 'God moves bodies within his boundless uniform Sensorium.' In such an apotheosis of the absolute framework of space and time any hypothesis framed by a physicist would indeed be a work of supererogation!

⁶For a more complete statement of Newton's views in relation to his theological background see E. A. Burt's work, *The Metaphysical Foundations of Modern Physical Science* (New York: Harcourt, Brace and Co., 1925).

⁷J. Frenkel, 'What Does Einstein Mean?' *Science*, LXXIV (1931), pp. 609-618.

In the preceding ten assumptions we have the foundational 'axioms' on the basis of which a theory of the physical world was erected. This theory we have portrayed as the aristotelian-euclidean-newtonian systems of classical science. Next we shall outline the new view, the non-aristotelian, non-euclidean and non-newtonian systems which replace the traditional orientation. In presenting these more general systems we shall also point out some of the broader applications of the newer view of nature.

THE NEW SCIENTIFIC FORMULATIONS

1. *Space and time are not antecedent vessels into which matter can be put.* These three 'realities' of the physical world, 'space, time and matter', form an inseparable trinity, a space-time-matter unity.

Authority for this view can be found anywhere in present-day relativity physics, but to quote only one authority let us confine ourselves to J. H. Jeans' statement in *The New Background of Science*. After discussing the views about 'space' of Descartes, Newton and Kant, Jeans affirms: 'In brief, for Kant, as also for Descartes and Newton, objects cannot exist without space; for Einstein, space cannot exist without objects.'⁸

2. *Space and time are not absolute and independent realities; they are relative to each other, and mutually implicative.*

3. *Instead of the elementalistic 'axiom' that a thing is where it is and that two different things cannot be in the same place at the same time, we now adopt a non-elementalistic postulate affirming that a thing is where it acts.* In this manner the old problem of action at a distance is solved.

4. *The notion that 'primary qualities' are objective and 'secondary qualities' are subjective is no longer acceptable in science.* Like the distinction between 'organism' and 'environment', the distinction between 'subjective' and 'objective' is one of those *either-or* (but not both) over-simplifications, due to the influence of the aristotelian two-valued logic of sharp dichotomies. Secondary qualities may be considered as both subjective and objective, though a better statement would be that *qualities are a result of relation*—colors, for example, are not absolute properties but are relations between the 'inner' and 'outer' worlds.

This problem of 'qualities' is too complex for full discussion here, but to indicate that relativity physics upsets the old notions, let me refer to the views of several investigators.

One of the first students to point out that relativity theory destroys the belief in the objectivity of primary qualities was Professor H. K. Schjelderup.⁹ A somewhat similar view was presented by T. Percy Nunn in a lecture on 'Anthropomorphism and Physics,' wherein he states that his purpose is to seek a tenable theory of physical objects which posits the objective existence of secondary qualities. This, Professor Nunn believes, is accomplished through relativity physics.¹⁰

The same view is argued by J. H. Jeans. Jeans points out that Descartes main-

⁸ J. H. Jeans, *The New Background of Science* (New York: The Macmillan Company, 1933), p. 97.

⁹ 'The Theory of Relativity and Its Bearing upon Epistemology,' *Scandinavian Scientific Review*, I (1922), 14-66.

¹⁰ Summarized in *Nature*, CXVIII (1926), 923.

tained that the only primary qualities were extension in 'space' and 'motion'. Locke, relying on Newton's teaching that an unchangeable mass was associated with every object, added 'mass' to the list. Commenting on this distinction, Jeans states that 'we shall see how the theory of relativity has shown that neither mass nor motion nor extension in space can qualify as true primary qualities.'¹¹ Jeans later points out that 'electrons, protons, and their varied arrangements seem as unable to provide true primary qualities as were the older mass, motion and extension in space of Locke and Descartes.'¹²

5. *Matter is not inert and passive, the recipient of the active 'forces' of nature which act upon it.* Matter is dynamic, in the sense that it is the locus of potential energy which makes matter as much an 'active cause' as the forces in space which were supposed to act on matter. 'Mass' is not an invariant quantity; electromagnetic mass is relative—mass is a function of velocity.

6. *The universe is considered as a four-dimensional space-time continuum.* In the words of Minkowski: 'From henceforth, space by itself, and time by itself, are mere shadows, and only a kind of blend of the two exists in its own right.'

7. *Since the fields of particles extend through all space, the same thing may be in different places at the 'same' time and different things may occupy the same space at the same time.*

8. The notion of absolute simultaneity of events in nature is based on Newton's formulation of Absolute, True and Mathematical Time, which, 'of itself, and from its own nature flows equably and without regard to anything external'; but, as P. W. Bridgman points out in his work on *The Logic of Modern Physics*, 'there is no assurance whatever that there exists in nature anything with properties like those assumed in the definition.'¹³ Einstein's special theory of relativity is even more emphatic in its rejection of the traditional belief that two events can happen in *different* places at the *same* time. That is to say, *relativity theory rejects 'simultaneity' of events in different frames of reference and declares that it is impossible to determine whether two events in different places are occurring at the same time.*

The way was prepared for this theory by certain developments in physics along the following lines: (1) The demonstration that physical forces are manifestations of electrical processes. (2) The demonstration that electrical forces (including light, which is an electromagnetic disturbance) are transmitted through space with a finite velocity. It is this latter development, the realization that forces are not propagated across space with an infinite velocity, as Newton unknowingly assumed, which provided the basis for the removal from physics of the notion of absolute simultaneity. The doctrine that the velocity of light is finite, and that no physical influence can travel with a velocity faster than that of light is the foundation for the relativization of the notion of time.

Before leaving that matter, it is well to note that this development does not exclude us from the use of the notion of a 'public' or 'social' time common to any

¹¹ J. H. Jeans, *op. cit.*, p. 14.

¹² *Ibid.*, p. 283.

¹³ P. W. Bridgman, *The Logic of Modern Physics* (New York: The Macmillan Co., 1927), p. 4.

system which can be treated as a whole. Here the 'local' times of the 'atomic' constituents of that whole give rise to emergent-organismic (non-elementalistic) wholes with the field of gestalt properties transposable across the whole. Thus, considering the case of the human organism, one is in a sense conscious of all the parts of his body at the 'same time', though it is still true that information about what is going on in the hands, feet, stomach, and so forth is transmitted over afferent nerve fibers to the brain with a finite velocity. Here 'simultaneity' in consciousness of a pain in a toe and a pain in the tooth may be experiences together, even though (as we say) the 'causes' of these events are to be found in different places in the physical world.

9. *'Force' is not the active cause of the motions of matter. Force is a manifestation of the curvature of space-time.* This means that field physics and topological relations determine the course of events. As Kurt Lewin has pointed out, while the tendency of the aristotelian mode of orientation is to search for the explanation of events in terms of single objects or individual events, the newer scientific view demands that we seek the 'causes' of events in the relations between the object or event and its environing field. Thus we are led to consider non-clementalistic situations, fields of influence which are non-additive and organismic.

10. *One of the most striking things about the new non-aristotelian system is the change in the notion of causality which is introduced.* The old two-valued system associated with classical physics, culminating in the newtonian-laplacian particle-picture of nature, gives rigid mechanistic determinism and predictability. *The newer view is a many-valued system based on multi-causal factors, introducing probabilities, especially where the Heisenberg uncertainty relation is involved.* However, the actual 'predictability' may really be higher in the new system, because the older mathematical techniques of classical physics are incapable of handling many-valued situations (e.g. the 'problem of three bodies'), even though in theory the results of interactions between particles or bodies were entirely determined and predictable. The newer theories of quantum algebra, the 'theory of perturbations', and the mathematics of non-commutative operations (e.g. quaternions) were made increasingly useful as a result of the discoveries of relativity physics, quantum theory, etc., and these developments have enormously increased our knowledge of what is fundamental in nature's processes and relations.

* * * * *

The great merit of Korzybski's system is that he saw the implications of what was happening in the growth of physical science and mathematics and was able to anticipate what the consequences of these developments ('revolutions') would be for biology, psychiatry and sound education. Korzybski points out that the newer systems, non-aristotelian, non-euclidean, and non-newtonian, are not only *more general, more flexible and more conditional* than the older systems,¹⁴ but that the trilogy also has one underlying structure and metaphysics.¹⁵ This mutual interdependence, mutual structure, and mutual metaphysics forces us to realize the profound semantic difference between the older aristotelian and the newer non-aristotelian systems.¹⁶ To

¹⁴ Alfred Korzybski, *Science and Sanity*, op. cit., p. 27.

¹⁵ *Ibid.*, p. 91.

¹⁶ *Ibid.*, p. 437.

justify the statement that the newer systems (of the trilogy) are more general, Korzybski points out that the non-euclidean systems deal with non-linear equations and with curved lines, of which the linear equations and the straight line (one of zero curvature) are only particular cases.¹⁷ And the general theory of Einstein, which is the foundation of non-newtonian systems, also introduces non-linear equations. Recalling Korzybski's contention that the notion of two-valued causality is connected strictly with linearity or additivity,¹⁸ it is not surprising to find Korzybski surmising that a non-aristotelian system will also solve the difficult structural and semantic problem of linearity versus non-linearity, additivity versus non-additivity.¹⁹ This passage hints at work still to be done.

It is a mistake to suppose that Korzybski claims that he has solved all the problems raised by his system. Much remains to be done in many different fields. The working out of satisfactory solutions to problems of causality raised by non-linear relations will take many years, but it will finally culminate in a *theory of coherence* which will provide a sound basis not only for *science* but for *sanity*. If sanity lies in adequate adjustment to the world of facts, coherent evaluations (what the older 'logics' called 'consistency of thought') will be possible only if we have a coherent theory of nature as the universal matrix of cosmic facts and relationships.

This program of investigation seems to provide an endless task. But this must not discourage us. Science is incomplete and stands in need of constant revision. At any given time it is our obligation to adjust ourselves to the universe of facts as science gives us knowledge of and interprets to us that world. If, in the course of time, our understanding of scientific reality changes and grows, science must revise its formulations of the 'facts' and 'principles'. We, in turn, the vast 'public', must then forthwith revise and readjust our evaluations, orientations and practices. Flexibility and conditionality of responses are what is called for.

The consequences of a new outlook and a new attitude toward causality may well be momentous. The need for scientific guidance and counsel becomes increasingly obvious, for if anything is clear in our world today it is that much of our social policy, our very modes of living, are in the hands of scientifically illiterate 'statesmen' who are mostly prostituting the results of technological and industrial advance by enslaving mankind under a new despotism. The new tyranny we face today is not a despotism of science; it is a despotism born of unsane and insane power politics resting upon the monopolistic control of the instruments of publicity and instruments of streamlined brutality. The restoration of genuine science will come only with the restoration of sanity in our social relations, and both science and sanity will prosper with the growth and spread of general semantics through all areas of human life. Then, and only then, shall we achieve the 'manhood of humanity'.

¹⁷ *Ibid.*, p. 606.

¹⁸ *Ibid.*, p. 89.

¹⁹ *Ibid.*, p. 607.

ON THE MANY-VALUED LOGICS*

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I intend to develop the idea that the old logic was devised for a world that was thought to have hard outlines, and that, now that the new mechanics has shown that the outlines are not hard, the method of reasoning must be changed.¹

So said Professor C. G. Darwin. He suggested that the new logic might arrive via statistical theory. He is only one of many physicists who have believed that the new developments in physics would compel new ways of thinking. The suggestions regarding the form which the new logic might take have been numerous and very vague; anyone with a concrete idea would have acted on it instead of merely suggesting it. Nevertheless, with so many people talking about a new logic, something should be done about it.

What?

Perhaps a good way to start would be to list the requirements that a logic must satisfy, and then see what possibilities are left open.

If physics is to consist of anything beyond a mere compilation of data, one must have physical theories. And what is a physical theory? Merely this: After one discovers by experiment that a certain physical structure exists, he exhibits a mathematical structure which approximates the physical structure. If the mathematical structure approximates the physical structure closely, the theory is called good. If a study of the mathematical structure reveals new and unsuspected details of the physical structure, the theory is an outstanding success. Examples of outstanding successes are Newton's theory of gravitation, Maxwell's theory of electromagnetic radiation, Einstein's theory of general relativity, the quantum mechanics, and so forth.

So the first requirement on our new logic is that it be adequate for the formation of physical theories. Let us be more precise. The new logic, together with its resultant mathematics, must be sufficiently rich in diverse but interrelated and interlocking parts so that mathematical structures will be available to approximate physical structures of any desired degree of complexity. To put it briefly, the new logic must have a wealth of structure.

This appears to be the only essential requirement on the new logic!

However, physical theories of the familiar sort make their contact with reality through measurement. Presumably a new logic might make contact with reality some other way (thus avoiding the principle of indeterminacy, perhaps). Since I cannot give even a vague suggestion for anything so bizarre as this, I will bow to convention to the extent of ruling that the new logic must make contact with reality through the

* Professor Rosser's paper has also appeared in the *American Journal of Physics*, IX, No. 4 (1941), 207-212, and is reprinted here with the editor's kind permission.

¹C. G. Darwin, 'Logic and Probability in Physics,' *Philosophy of Science*, VI (1939), 48-64. Presidential address to the Mathematics-Physical Section of the British Association for the Advancement of Science.

medium of measurement; that is, the new logic must contain those indispensable adjuncts of measurement—numbers.

With the requirements on the new logic reduced to such a drastic minimum, it certainly seems plausible that such new logics must exist—indeed, a great many of them. But how can they be found? One cannot just sit down and say, 'Now I will think of a new logic; one with numbers and a wealth of structure.'

Past experience with thinking up new ideas suggests that one way of proceeding would be to list the presuppositions of the old logic, then deny one of them and try to see what one gets. I shall discuss a result of one such attempt.

Before describing the new logic, I wish to estimate its importance. With (probably) a great many new logics to be discovered, it is quite unlikely that the first to be discovered should turn out to be the one which will unify twentieth-century physics. Nevertheless, an attempt to unify modern physics by means of the new logic will require a scrutiny of familiar situations from a novel point of view, and this cannot fail to bring to light useful ideas that are at present unnoticed. Also the effort to acquire the new point of view will free our minds of preconceived ideas and facilitate the discovery of other new points of view. So the new logic should stimulate invention, and the chance still remains that it will turn out to be useful in its own right.

Now for the new logic. In the old logic, a basic principle is that any statement is either true or false. One would expect that to deny this would leave us in an intolerable mess, but it does not seem to.

First, if there can be another possibility for a statement besides the usual possibilities of true or false, there might as well be several. So we classify logics according to the total number of possibilities for a statement. Logicians refer to the possibilities as *truth values*. In the old logic there are two possible truth values, namely, true and false; so the old logic is a two-valued logic. When we admit one other possibility for a statement besides true and false, we have a three-valued logic. When we admit two other possibilities for a statement besides true and false, we have a four-valued logic. And so on. There seems to be no reason for not allowing an infinite-valued logic, but I do not intend to cudgel my brain with that monstrosity for a while yet.

Before proceeding further, we will point to a possible use for a three-valued logic in modern physics. In Dirac's interpretation of his 'principle of superposition,' he affirms that between the states of an atomic system there exists a peculiar relationship such 'that whenever the system is definitely in one state, we can equally well consider it as being partly in each of two or more other states. The original state must be regarded as the result of a kind of *superposition* of the two or more new states in a way that cannot be conceived on classical ideas.'² In a two-valued logic, a system is either in a state or not in it. In a three-valued logic, a system can fail to be either in a state or not in it, which situation can be described by saying that the system is partly in the state.

Returning to the description of our new logic, we recall that one requirement is that it contain numbers. So we try to go about getting numbers. In a two-valued

² See P. A. M. Dirac, *The Principles of Quantum Mechanics* (1st edition; Oxford: Clarendon Press, 1930), p. 8.

logic, one can derive all of modern mathematics (which certainly includes numbers) from only four basic ideas.³ These are described as follows:

First, the idea *and*. If P and Q are two statements, one can form a new statement by combining them with an *and*. We will denote the new statement by $P \& Q$. It is standard practice to refer to $P \& Q$ as the 'logical' product of P and Q .

Second, the idea *not*. If P is a statement, the contradictory statement to P can be formed by inserting a *not* in P at the grammatically correct place. We will denote the contradictory of P by ∞P . Thus if P is 'It is raining,' ∞P would be 'It is not raining.'

Third, the idea *for all*. If P is a statement involving a variable x , one can form the new statement, ' P for all x .' We will denote the new statement by $(x)P$. Thus if P is ' $\sin^2 x + \cos^2 x = 1$,' then $(x)P$ is ' $\sin^2 x + \cos^2 x = 1$ for all x .' To realize that there is a distinction between P and $(x)P$, let P be ' $x^2 - 4x + 3 = 0$.' Then $(x)P$ is ' $x^2 - 4x + 3 = 0$ for all x .' In this case $(x)P$ is irrevocably false, whereas P can be true (namely, when $x = 1$ or 3).

Fourth, the idea *is a member of*. If α is a collection of objects and x is an object, one can form the statement that the given object x is a member of the given collection α . We denote this statement by ' $x\alpha$ '.

Now since one can get numbers from these four ideas in a two-valued logic, we shall take pains to get these four ideas into our new logic with the hope that they will produce numbers there also. To simplify matters for the reader, we shall restrict the discussion to a three-valued logic. We denote our three truth values by T , $?$ and F . We think of T as signifying true, F , false, and $?$, the new possibility which we are allowing.

	T	F
T	T	F
F	F	F

FIG. 1

	T	$?$	F
T	T		
$?$			
F			

FIG. 2

First consider *and*. Let us pause to remind ourselves of the behavior of *and* in the old two-valued logic. Here, the possibilities for P , Q and $P \& Q$ are either T or F and no other. Also $P \& Q$ is T if and only if both P and Q are T . (The reader can see this at once by reference to the meaning of the word *and*.) This can be exhibited in a 'multiplication table' for *and* (Fig. 1). It is to be read as follows. Across the top line are written the possible values of P . Down the left-hand column are written the possible values of Q . Now, knowing the value of P and the value of Q , one can find the value of $P \& Q$ by looking in the table under the value of P and to the right of the value of

³ See W. V. Quine, *Mathematical Logic* (New York: W. W. Norton and Company, Inc., 1940). Strictly speaking, Quine uses only three ideas. However, his three ideas can be built up out of our four basic ideas, and our four ideas are rather more simple than Quine's three, so for expository purposes I have chosen the four.

Q. It is easily seen that the table agrees with the condition that $P \& Q$ is *T* if and only both *P* and *Q* are *T*. Also this condition could not be fulfilled for any other multiplication table. For, by the condition, a *T* must go in the upper left-hand corner where both *P* and *Q* are *T*, and cannot go elsewhere, since either *P* or *Q* fails to be *T* at every other place. So the remaining places must be filled with *F*'s.

Now proceed to a three-valued logic. In a two-valued logic, the condition ' $P \& Q$ is *T* if and only if *P* and *Q* are both *T*' described the idea *and* completely, so we take this to be our definition of *and* in a three-valued logic. Let us form the multiplication table for *P* and *Q* in three-valued logic. Write the possible values of *P* across the top line, and the possible values of *Q* down the left-hand column (Fig. 2). By our condition, a *T* must go in the upper left-hand corner where both *P* and *Q* are *T*. Also no other square can contain a *T*. But, for all we have said, either *F* or ? can go in any of the other squares. In other words there are many ways of filling out the other squares, depending on whether we put *F*'s in all, ?'s in all, or *F*'s in some and ?'s in the rest. With eight squares to be filled, and two possibilities to each square, there are altogether 2^8 or 256 possible ways of filling the squares. Moreover, each method of filling the squares satisfies our condition and so is a kind of *and*. In other words, there turn out to be 256 different kinds of *and* in a three-valued logic!

Apparently the only thing that can be done about the matter is to pick out the *and* that one likes best, and try to ignore the rest. Judging from the experience thus far available, this is feasible.

Not everybody likes the same *and*. Post, Łukasiewicz, and Rosser prefer the *and* with the table in Fig. 3. This *and* is got by agreeing that ? is falsier than *T*, and *F* is falsier than ?, and that $P \& Q$ should be exactly as true as the falsier of its two factors. With such an *and*, one does not commit himself as to what ? denotes. Bočvar⁴ chooses to commit himself as to what ? denotes, and thinks of it as meaning 'undecidable.' If either *P* or *Q* is undecidable, Bočvar feels that $P \& Q$ is consequently undecidable (not everyone agrees to this). So Bočvar favors an *and* with the table in Fig. 4.

	<i>T</i>	?	<i>F</i>
<i>T</i>	<i>T</i>	?	<i>F</i>
?	?	?	<i>F</i>
<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>

FIG. 3

	<i>T</i>	?	<i>F</i>
<i>T</i>	<i>T</i>	?	<i>F</i>
?	?	?	?
<i>F</i>	<i>F</i>	?	<i>F</i>

FIG. 4

The situation with regard to *not* is very similar. When *P* is *T*, ∞P must fail to be *T*, and when *P* is *F*, ∞P must fail to be *F*. Whereas that determines the behavior of *not* completely for a two-valued logic, it allows considerable leeway for a three-valued logic. Among the twelve possible *not*s in three-valued logic, three have received special study. They are indicated in the three tables in Fig. 5, in which the possible

⁴See the 'Historical and Bibliographical Remarks' at the end of this paper.

values of P are written under P , and the corresponding values of ∞P are written under ∞P . The table on the left was favored by Post, the middle one by Łukasiewicz, Bočvar, and Rosser, and the one on the right by Bočvar (who seemed to need two *nots*). The question about *not* on which there was disagreement, involved the status of $\infty \infty P$. In two-valued logic, a double negative yields a positive. This can be stated two ways (which are the same for two-valued logic, but not for three-valued logic). One way of saying that two negatives make a positive would be to say that $\infty \infty P$ is the same as P . In a three-valued logic, this could be the case only for the middle one of the three *nots* tabulated in Fig. 5. Another way of saying that two negatives

P	∞P	P	∞P	P	∞P
T	$?$	T	F	T	F
$?$	F	$?$	$?$	$?$	T
F	T	F	T	F	T

FIG. 5

make a positive would be to say that $\infty \infty P$ is T when and only when P is T . This would be the case for either the middle or right-hand *not* shown in Fig. 5. That still leaves Post's *not* (the one on the left) to be explained. Post's feeling in the matter was that if a double negative yields a positive in two-valued logic, then in three-valued logic, a triple negative should yield a positive. His *not* is chosen accordingly.

We shall not attempt to give any details of the behavior of *for all* in three-valued logic, except to say that it is rather like *and*, only worse.

By comparison, the situation with regard to $x\infty\alpha$ (the reader is reminded that this means ' x is a member of the collection of α ') is quite simple. When x is in the collection α , we assign the value T to $x\infty\alpha$, and when x is not in the collection α , we assign the value F to $x\infty\alpha$, and in all other cases we assign the value $?$ to $x\infty\alpha$. It must be remembered that we are dealing with a three-valued logic, and so must curb any feeling (resulting from two-valued habits of thought) that there would be any case where $x\infty\alpha$ is $?$.

We shall digress again, this time to reassure the reader on a delicate point. In describing the *and*, we used *and*, and in describing the *not*, we used *not*. Perhaps this is circular. The situation when we are describing the two-valued *and* is quite like that of the person writing a book on English grammar and writing it in English. To describe his English grammar, he must use English sentences, and these embody English grammatical structure. A person without knowledge of English grammar could not acquire a knowledge of English grammar from the book because his ignorance of English grammar would prevent him from comprehending the book. Similarly, when we describe the two-valued *and*, we must use *and* (or some equivalent such as *both*); this second *and* is necessarily the *and* of two-valued logic. So if one did not know the meaning of *and* to start with, he could not learn it from our explanation. However, if one does know the meaning of *and*, he must agree that our explanation is correct.

However, everybody already knows the meaning of the two-valued *and*, so it is perfectly all right if our explanation of the two-valued *and* is not enlightening. What is

much more to the point is whether the explanation of the three-valued *and* is enlightening. Here the situation is quite different. We use the two-valued *and* to describe the three-valued *and*. So one does not need to know the meaning of the three-valued *and* in order to comprehend the description; consequently he can learn the meaning of the three-valued *and* from the description. The situation is perfectly analogous to that of a book on Latin grammar written in English. A person with absolutely no knowledge of Latin grammar could learn Latin grammar from such a book, whereas he would be helpless if given a book on Latin grammar written in Latin.

Thus we proceed to clear up the question of the apparent circularity of the two *ands*. When one *and* is two-valued and the other *and* is three-valued, the two *ands* actually are totally distinct ideas, and no circularity exists in using one to describe the other. Incidentally we have answered certain critics who claim that an explanation of three-valued *ands* should be made in terms of three-valued *ands*. On the contrary. An explanation of three-valued *ands* must be made in terms of whatever kind of *ands* the reader already understands.

This brings up a horrible thought. If we rear a generation to think in terms of three-valued logic, will it some day become necessary to write an explanation in terms of three-valued *ands* of the meaning of the two-valued *and*?

One matter connected with ' $x\epsilon\alpha$ ' is of especial interest. For most collections of objects, the collection itself is not a member of the collection.⁵ That is, for most collections α , it is not true that $\alpha\epsilon\alpha$; instead, $\infty (\alpha\epsilon\alpha)$. Now define a collection U to consist of those collections α for which $\infty (\alpha\epsilon\alpha)$; that is, U is the collection of exactly those collections which are not members of themselves. Is U a member of itself; that is, is $U\epsilon U$? In two-valued logic only two cases can arise: either it is or else it is not; that is, $U\epsilon U$ is either T or F .

Case 1. Suppose that $U\epsilon U$ is T ; that is, U is a member of U . However, by definition, each member of U is not a member of itself. So U (being a member of U) is not a member of itself, namely, of U . This contradicts our assumption that $U\epsilon U$ is T . So that possibility is out.

Case 2. Suppose that $U\epsilon U$ is F ; that is, U is not a member of U . Thus U is not a member of itself. However, by definition, every collection that is not a member of itself is a member of U . So U is a member of U . This contradicts our assumption that $U\epsilon U$ is F . Consequently, that possibility is out.

At this point a third possibility would be very helpful. If one could simply classify $U\epsilon U$ as $?$, the situation would be saved.

Of course, the entire discussion involving U is open to a variety of objections. Some extremists, who are determined to preserve a two-valued logic at any cost, declare that the whole business involving U is senseless. However, $x\epsilon\alpha$ is necessary in mathematics, and is used in mathematics in the way we used it in discussing U . If our discussion of U is senseless, so is mathematics senseless. 'Very well,' say the extremists, 'so mathematics is senseless.'

These are brave words, and show an admirable unwillingness to be bound by tra-

⁵ For a collection which is, take the collection whose members consist of absolutely everything, and so include the collection itself along with everything else.

dition, but they ignore certain profound realities. In particular, they ignore the fact that engineering and physics and chemistry use mathematics in a basic manner. And the engineers and physicists and chemists produce results which the extremists eat and wear and ride in and listen to, and which cannot be ignored very conveniently.

Unfortunately the complications arising in our discussion of U must be reckoned with, and the use of three-valued logic seems to be one way of doing it. Not that everything is a bed of roses even with a three-valued logic. The definition of U involves a *not*, and in three-valued logic the use of *not* involves further complications. However, Bočvar has shown that one can apparently clear up the U business by means of three-valued logic.

Let us see if the three-valued logic is living up to the requirements we laid down earlier. We asked for wealth of structure. Well, we are getting it in abundance. In fact, after working a while with n -valued logics, one begins to wonder if there is such a thing as too much structure.

We also asked for numbers: We put *and*, *not*, *for all*, and *xxx* into our three-valued logic with the hope of getting numbers. It turns out that we get numbers. We will not indicate how the numbers arise, but will merely remark that because of the multiplicity of *ands*, *nots*, and so forth, we get no one set of numbers but many sets. There is a set that behaves like two-valued numbers as long as one concentrates on the truth values T and $?$, and another set that behaves like two-valued numbers as long as one concentrates on the truth values T and F , and still other sets that appear to flutter in random fashion from one truth value to another. For instance, for some sets, $2 + 2 = 4$ is T , and for other sets, $2 + 2 = 4$ is $?$. However, one never gets $2 + 2 = 4$ to be F , even if one picks the 2's and the 4 from three different sets. Lest the reader be too outraged at having $2 + 2 = 4$ be anything but T , let me point out that with several hundred 4's, if one picks the same pair of 2's every time, he would not want $2 + 2 = 4$ to be T every time. Add to this the fact that there are several hundred 2's also, and that the two 2's do not even have to be the same ones, and the wonder is that $2 + 2 = 4$ never gets to be F .

This may look too confused to be of any possible use, but once one gets over the shock, certain signs of order appear. For instance, it is disconcerting to use two different 4's and get $4 = 4$ to be $?$ instead of T , but at least $4 = 4$ is never F . Also $3 = 4$ is never anything but F , no matter what 3 or 4 you pick. So the numbers stay in order, as they should. They merely have some sidewise motion, so to speak. And if one is not prone to seasickness, there may be situations where such sidewise motion is very helpful. In fact, one cannot help feeling that something of the sort would be handy in modern physics. The physicist introduces wave functions and all sorts of complications in order to achieve compatibility between a mathematics with sharp edges and a physics without sharp edges. The situation cries for a mathematics without sharp edges, and a three-valued logic happens to produce a mathematics without sharp edges. We do not know enough about it yet to judge whether or not it is the right one, but at least it encourages us to believe that the right one exists, and to look for it.

HISTORICAL AND BIBLIOGRAPHICAL REMARKS

An unwillingness to accept the principle that every statement is either true or false is apparently nothing new. It is said that the philosopher Hegel challenged this principle. Some philosophers divide statements, not into true and false, but into necessary (= necessarily true), impossible (= necessarily false), possible but not necessary, and so forth. In 1896, Hugh MacColl published a twenty-eight-page paper [*Proceedings of the London Mathematical Society*, XXVIII (1896), 156-183] giving a quite detailed study of a logic with the three values, 'necessary', 'impossible', and 'possible, but not necessary'. As examples of these three values, he exhibited the three statements ' $2 = 2$ ', ' $3 = 2$ ', and ' $x = 2$ '.

However, these earlier writers only repudiated two-valued logic to a very slight extent. For a thoroughgoing repudiation of the two-valued logic, such as indicated in this paper, one must turn to much more recent writers. Jan Łukasiewicz has published several papers (the first in Polish, in 1920) which are often looked upon as the real beginning of the subject of many-valued logics. A satisfactory exposition of the work of Łukasiewicz (and his associate, Tarski) is to be found in Lewis and Langford, *Symbolic Logic* (New York: Century, 1932), pp. 213-234. Another important contributor was E. L. Post, whose paper, 'Introduction to a General Theory of Elementary Propositions' [*American Journal of Mathematics*, XLIII (1921), 163-185] is a landmark in the subject. Two recent papers which mark advances over the work of Łukasiewicz and Post are:

D. A. Bočvar, 'On a Three-valued Calculus and Its Application to the Analysis of Contradictions,' *Matématičeskij sbornik*, n. s. IV (1939), 287-308. This paper is in Russian, but a review in English, and a correction to this review, appears in the *Journal of Symbolic Logic*, IV (1939), 98-99; V (1940), 119.

B. Rosser, 'The Introduction of Quantification into a Three-valued Logic,' reprinted for the members of the Fifth International Congress for the Unity of Science, Cambridge, Mass., 1939, as from the *Journal of Unified Science* (Erkenntnis), IX. This volume is not yet available in this country, due to dislocations in Europe. However, the article is covered by the reprint service of *Mathematical Reviews* (see cover 2 of that journal; order by title; length of paper, 6 pages).

The development of numbers in a many-valued logic has not yet appeared in print, but will be incorporated in an article by the present author in a forthcoming issue of the *Journal of Symbolic Logic*. Since this paper will also feature certain technical improvements, the development will be started from the very beginning; hence the new paper will be independent of the author's earlier paper, and will supersede it completely.

For anyone desiring a complete bibliography of many-valued logics, the bibliographical material in the *Journal of Symbolic Logic* is unexcelled; see III (1938), 198 and V (1940), 181, under 'Many-valued Logic.'

RESEARCH PROGRAM IN LANGUAGE BEHAVIOR

DEVELOPMENT OF FORMULATIONS AND PROCEDURES CONSISTENT WITH THEORETICAL STRUCTURE OF GENERAL SEMANTICS

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This paper is designed to present the general outline of a research program, to summarize briefly the studies already completed, and to indicate studies in progress. The program as a whole is concerned with a relatively comprehensive study of language behavior, and it represents the writer's attempt to formulate research problems and to develop investigative procedures consistent with the theoretical structure of general semantics. The importance of language and of symbolization generally, as a distinctly human form of behavior and as a basic factor in personal and social problems, is more or less generally recognized, and is systematically explicated in Korzybski's writings. Effective, rigorous investigation of such behavior depends upon the development of highly reliable and differentiating measures, by means of which specific aspects of language behavior might be systematically observed in relation to one another and to other variables. With such measures, significant testable hypotheses can be formulated and checked, and a body of relatively dependable information can be accumulated.

A particularly apparent, and perhaps the outstanding, contribution of Korzybski lies in the degree to which he has succeeded in formulating the general methodology of science.¹ If, for some readers, the writings of Korzybski are in certain respects obscure, they could hardly be so insofar as they purport to indicate the basic method of science, and to relate that method to problems of personal and social organization. Indeed, the entire system of general semantics is remarkably abstracted in the three words which comprise the title of Korzybski's main work, *Science and Sanity*, in which the *and* does not imply *plus*, but rather *as*. Science *as method* turns out to be, within the framework of general semantics, practically synonymous with sanity *as method*. Extensionalization, the basic principle of general semantics, is seen as amounting to science-in-action, science as method applied, insofar as it may be, from moment to moment in daily life, as the general method of sanity.

Now, extensionalization at its best is nothing more nor less than what we have known, at least since Galileo, as scientific research. If there may be some difficulty in recognizing this fact, it would seem to arise from the relatively elementalistic manner in which research is more or less generally conducted. The very fact that rigorous investigation is of necessity concerned with highly specific problems, prevents many individuals—including the scientists themselves quite frequently—from realizing the enormously ramified implications of the research problems, and the pervasive generality of the highly specialized techniques used in the investigations of them. Time and again

¹ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941). See also his other writings, distributed by the Institute of General Semantics, Chicago, Illinois.

the results of supposedly 'pure' research, conceived in the ivory tower of esoteric curiosity, have turned out to have amazingly widespread and almost embarrassingly mundane applications. Science, as highly refined and specialized techniques, is, of course, confined to the laboratories, but its results make the headlines and the headaches of the 'average man's' workaday world. Everything from the horrors of mechanized warfare to the absurdities of the modernized drugstore attests to the inescapably non-elementalistic character of science. The rigorous specificity of any given research investigation is in no sense inconsistent with the generality of the basic method employed in it, nor with the relativity of the data which it yields.

The point of all this is extremely simple and obvious. The point of it is that general semantics, regarded as a systematic generalization and explication of the method of science, should be peculiarly conducive to research—peculiarly conducive to the exploitation of scientific method in the investigation of personal and social problems generally, including the problems raised by general semantics itself. The extent to which any student of general semantics becomes a research scientist, the extent to which he employs a language that is conducive to extensionalization at its best, would appear to be the 'litmus' by which his grasp of general semantics might be most appropriately judged. And this would seem to be particularly true in the case of the general semanticist's approach to the study of language itself, including the language he uses for talking about language.

The particular program of research which the present writer has formulated is by no means to be regarded as all-inclusive. Research in general semantics is not to be confined within any such narrow limits as are here indicated.² The research program under discussion is designed to:

1. Develop reliable and differentiating measures of specified aspects of language behavior.
2. Determine the degree to which the resulting measures are intercorrelated.
3. Determine the degree of correlation between these measures and other pertinent variables involved in environmental influences, physiological conditions, intelligence, and personality adjustment.
4. Apply the measures to a comprehensive investigation of language development.
5. Determine the degree to which language behavior, as measured, is modified under specified conditions.
6. Determine the degree to which modification in language behavior is associated with—or effects—modifications in other aspects of behavior or adjustment.
7. Indicate the normal characteristics of language development and language behavior, and the varieties of disorder or abnormality in such behavior, in terms of the measures used.

In general, the issues with which this research is concerned fall under two large headings. First, there are certain issues relating to language itself (though it is not altogether legitimate to speak in such terms)—issues involving extensional and intensional agreement, vagueness, extensional synonymity, and various essentially characteristic structural relationships involved in spoken and written language, some of which

² The writer's own studies of 'stuttering', for example, lie almost entirely outside the scope of the program being discussed in this paper.

have been investigated by Zipf.³ Second, there are issues relating to individual and group differences among the users of language, or, more strictly speaking, among samples of written and spoken language. Included here, of course, are all those problems which concern the relation of these neuro-linguistic differences to one another and to other variables.

The specific measures involved in this program have been adapted, in part, from measures employed by previous investigators, and, in part, they have been developed by the writer. The extensional agreement index (EAI) and intensional agreement index (IAI) were first presented in 1939 in a previous publication.⁴ Since that time a number of refinements and elaborations of them have been worked out, however. The EAI was used by Tuthill in a study which he reported to the Denver Congress.⁵ It has been used also in three M.A. theses carried out under the writer's direction, in which a word-fact relating test was constructed and given preliminary application.⁶ The principle involved in this test appears to be sound and to have a wide range of possible applications. At least three different measures can be obtained by means of the test: an EAI for each of the several words which are defined extensionally by each subject taking the test; an extensional conformity index (ECI) expressive of the degree to which each subject conforms to a given group in defining various words extensionally; and an extensional synonymity index (ESI) expressive of the degree of overlap between any two words as defined extensionally by the individuals tested. Only preliminary, ground-breaking work has been done on the test or on these three measures which it yields, and any reporting of data must await further study.

The intensional agreement index (IAI) has been used by Mr. Newton Whitman and the writer in an unpublished study of intensional agreement among textbook authors in defining certain words in psychology and biochemistry, respectively. In every case the IAI's were higher for the biochemical than for the psychological terms; that is, with regard to the words used in defining certain of their key terms, the biochemists agreed to a greater degree among themselves than did the psychologists. Further study along this general line is planned.

Mention has been made above of certain studies that have been done by Zipf. On the basis of these studies, Zipf has postulated certain laws.⁷ One of these posits an inverse (not necessarily proportionate) relationship between the length of words and the frequency of their occurrence (shorter words occur in written or spoken lan-

³ G. K. Zipf, *The Psychobiology of Language* (New York: Houghton Mifflin, 1935).

⁴ Wendell Johnson, *Language and Speech Hygiene*, General Semantics Monographs, No. 1 (Second edition; Chicago: Institute of General Semantics, 1941).

⁵ Curtis Tuthill, 'A Quantitative Study of Extensional Meaning with Special Reference to Stuttering,' Unpublished Doctoral dissertation, Department of Psychology, University of Iowa, 1939. Abstracted for the Second American Congress on General Semantics, Denver, 1941.

⁶ R. Knoche, 'Agreement among University Freshmen on Specified Words Defined Extensionally and Intensionally,' Unpublished Master's thesis, Department of Speech, University of Iowa, 1939; M. Gallant, 'A Statistical Evaluation of a Word-Fact Relating Test,' Unpublished Master's thesis, Department of Speech, University of Iowa, 1939; R. Moore, 'A Quantitative Study of the Labeling Behavior of Fifth and Sixth Grade Children from Upper and Lower Socio-economic Groups,' Unpublished Master's thesis, Department of Speech, University of Iowa, 1939.

⁷ G. K. Zipf, *op. cit.*

guage more frequently than longer words). In part, Skalbeck and Schafitz, the writer's students, have investigated this relationship, finding that in general it holds with the exception that, in English, words of one or two letters in length occur less frequently than do words of three letters in length. This is of some importance, since both Skalbeck and Schafitz found that about half or more of the words used (written language) are three letters or less in length.⁸ Zipf has also investigated 'word frequency distribution', and has advanced two formulations regarding it. First, he has stated that $ab^2 = k$, in which a represents the number of occurrences of a given word in a given language sample, b represents the number of words having that occurrence in the sample, and k is a constant for any one language sample. Second, he has postulated that the most frequent word in a large sample will make up one-tenth of the total sample, the second most frequent word will make up one-twentieth of the total, the third most frequent word will make up one-thirtieth of the sample, etc. He refers to this as the 'harmonic series law of word frequency distribution'.

These formulations of Zipf are of interest to general semanticists in that they are suggestive of certain scientific approaches to the investigation of language structures. Mr. John Chotlos is at present engaged in a statistical and comparative analysis of individual language samples, in which Zipf's hypotheses will be tested and any indicated refinements or elaborations of them will be developed.⁹

The language samples from which Mr. Chotlos is working have been collected by the writer from 1,000 selected Iowa public school children, each of whom wrote 3,000 words about 'whatever he wanted to write about'.¹⁰ These samples, together with numerous measures of speech, reading, vocabulary, intelligence, study skills, scholastic achievement, auditory and visual acuity, etc., are being used in a series of studies. One of these, the investigation by Schafitz mentioned above, has been completed; it involved an analysis of thirty-two of the 3,000-word samples in terms of word length, type-token ratios, and I-ness (proportion of self-reference terms), and a correlational study of these measures, together with other measures of chronological age, mental age, socio-economic status, and sex.

The type-token ratio, just referred to, has been discussed briefly in a previous publication.¹¹ The number of types in a language sample is the number of different words, and the number of tokens is the total number of words in the sample. The ratio

⁸ O. M. Skalbeck, 'A Statistical Analysis of Three Measures of Word Length.' Unpublished Master's thesis, Department of Speech, University of Iowa, 1938; Ethel Schafitz, 'A Study of the Relation between Word Length and Type-Token Ratio in the Written Language of Iowa School Children.' Unpublished Master's thesis, Department of Psychology, University of Iowa, 1941.

⁹ The study by Mr. J. Chotlos, a Doctoral dissertation in the Department of Psychology, is being directed jointly by Professor Don Lewis, of the Department of Psychology, and the writer, at the University of Iowa.

¹⁰ The collection of these language samples was part of a WPA remedial education survey and demonstration project, sponsored by the Iowa Child Welfare Station and, in part, by the Iowa State Department of Public Instruction. Professor George D. Stoddard, then Dean of the Graduate College at the University of Iowa and now New York State Commissioner of Education, was the general director and sponsor's representative for this project; Dr. C. Esco Obermann and Mr. George Wischner served successively as statewide supervisors; and the writer was the technical director.

¹¹ Wendell Johnson, *op. cit.*

of types to tokens is expressive of the degree of differentiation involved in the structure of the language used in a given sample. The ratio can be computed for all words in a sample, or for nouns only, adjectives only, etc., for words of high frequency, or words of low frequency, etc. So far we have developed four different forms of the ratio. In the course of his investigation, previously referred to, Chotlos will attempt a statistical and mathematical evaluation of the ratio in its various forms, and he will examine its relationship to Zipf's $ab^2 = k$ formulation and to his harmonic series law of word frequency distribution, as well as to a related formula concerning word-frequency distribution developed by Carroll, working with Professor B. F. Skinner of the University of Minnesota.¹²

Two forms of the type-token ratio, applied to all the words in a sample, have been employed by Fairbanks and Mann, under the writer's direction, in studies of the spoken and written language of adult schizophrenics and university freshmen.¹³ In these two investigations the type-token ratio was found to differentiate the language samples produced by the schizophrenic patients from those produced by the 'normal' university students, the language of the schizophrenics having a less highly differentiated structure, in terms of the analysis that was made. However, the studies were of interest mainly from a methodological point of view, and do not warrant elaborate final conclusions concerning the structure of schizophrenic language. In these studies, grammatical analyses were made, also, and group differences were found in terms of the ratio of adjectives to verbs, and to lesser degrees in terms of adverbs to verbs and adjectives to nouns. Further study along these lines is being pursued.

The interrelationships among these language measures, and the relation of them to other types of variables, have been investigated to some extent in most of the studies mentioned above. More intensive investigation of these relationships will be carried out. The methodological aspects of the research program, however, are clearly basic to any of its other aspects. In this connection, certain measures which we have developed have not been discussed in the present paper.¹⁴ Within the next five years, perhaps, many of the more fundamental methodological problems should have been fairly well disposed of and a reasonable beginning made along theoretical and practical

¹² J. B. Carroll, 'Diversity of Vocabulary and the Harmonic Series Law of Word-Frequency Distribution,' *Psychological Record*, II (1938), 379-386.

¹³ Helen Fairbanks, 'A Semantic Analysis of the Quantitative Differences between the Language of Schizophrenic Patients and Normals.' Unpublished Doctoral dissertation, Department of Psychology, University of Iowa, 1940; Mary B. Mann, 'A Study of the Quantitative Differentiation of Samples of Written Language.' Unpublished Doctoral dissertation, Department of Psychology, University of Iowa, 1941.

¹⁴ Proportional vocabulary is a measure that was used in a very limited sense in the Fairbanks and Mann studies. Standard frequency vocabulary is a measure that has not yet been employed; it is expressed as the mean frequency rank of the words in any given language sample, the frequency rank of each word being determined by its relative frequency of occurrence in language generally, as ascertained from available 'word counts', including the one involved in the study mentioned in footnote 10 above. An intensional synonymity index and an intensional conformity index have been formulated but not yet applied. Also, some new approaches to the measurement of vocabulary are in process of being developed, from a general semantics point of view. A measure of 'all-ness' (see footnotes 1 and 4), and a test of the ability to verbalize differences are being worked on, the test of verbal differentiation having been constructed and administered so far to a number of nursery school children.

lines of investigation. Each of the issues we have so far considered from a research point of view has suggested the use or development of a number of measures, and each measure has been suggestive, in turn, of many research investigations. As hypotheses are indicated by research findings, they will increasingly suggest further studies. It would certainly seem that a considerable area of research is being developed and its vigorous exploitation might reasonably be expected to engage the interest and the energies of students of general semantics.

The writer is keenly aware that in this paper he has sacrificed thoroughness in order to sketch the outlines of an entire program. This seemed desirable for the purposes of the occasion. Publication of detailed reports of many of the studies mentioned is to be expected within a reasonable period. It has been the purpose of this paper merely to indicate the general character of the research program as a whole and to refer briefly to some of the individual studies completed or in progress, as examples of types of investigation. The writer feels that after some three years of exploratory work certain main lines of direction are becoming clear. What such a program as this should accomplish in ever increasing degrees is a more adequate language for talking about language, and therefore a heightened consciousness of the process of abstracting, with the implied advantages for individuals and social groups.

GENERAL SEMANTICS PSYCHIATRY, PSYCHOTHERAPY AND PREVENTION

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EDITOR'S NOTE: The addresses by Alfred Korzybski at the two evening sessions of the Congress bore on the theme of the program, 'General Semantics and Methodological Foundations for Cultural Integration in our Time'. Count Korzybski does not use a manuscript in speaking and his style of oral delivery, depending as it does on his use of diagrams and other visual devices, precluded the possibility of our publishing his contributions as made at the Congress. Among his published work the present paper was chosen for republication here because it briefly presents the leading formulations of the non-aristotelian system and suggests some implications of the methodology for educative effort to bring about those re-orientations fundamental to personal adjustment and social reconstruction in our time.

The reader unacquainted with general semantics will find this paper a concise summation of the leading principles, terminology, and techniques of the discipline which are applied in the congress papers printed in this volume. In addition to works cited in the footnotes, readers will find these recent writings of Korzybski especially relevant: The 'Foreword' to General Semantics Monograph No. III, A Theory of Meaning Analyzed (Chicago: Institute of General Semantics, 1942), pp. vii-xvi; the 'Introduction to the Second Edition' of Science and Sanity (1941), some sixty pages of new formulations and further elaborations of the methodology that is inductively presented in the body of the text and remains unchanged since the first printing in October, 1933. The 'Introduction' is also available as a separate publication distributed by the Institute of General Semantics.

'General Semantics, Psychiatry, Psychotherapy and Prevention' was first published in the American Journal of Psychiatry, September, 1941, and as such is an abridgement of the original paper delivered in abstract at the ninety-sixth annual meeting of the American Psychiatric Association, Cincinnati, Ohio, May, 1940. It is republished here with the kind permission of Dr. C. B. Farrar, Editor of the Journal. The original paper (mimeographed) containing other important material, especially on the subject of self-reflexiveness, is listed among the publications of the Institute.

SCOPE, METHODS AND IMPLICATIONS

General semantics is not a medical science, but like bacteriology, it is essential to general medicine and particularly psychiatry. General medicine without psychiatry and psychosomatic considerations represents little more than glorified veterinary science. Psychiatry and psychotherapy without general semantics cannot help but involve metaphysical factors. General semantics is a strictly empirical, natural science. It recognizes neuro-linguistic and neuro-semantic environments as unavoidable conditioning environments, and considers 'mental' illness, science and mathematics as types of

* Author of: *Manhood of Humanity: The Science and Art of Human Engineering* (1921), and *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (1933).

human reactions. We discover that all forms of human reactions involve some common mechanisms which work automatically for the benefit or detriment of humanity.¹

There are, however, formidable difficulties in this work about which it may be wise to forewarn the reader. The power of terminology is well-known in science. As yet this problem is entirely disregarded in our daily linguistic habits, and not properly evaluated even in psychiatry. The problem is serious because of the well-known difficulty of re-canaling our nervous systems. The language we use in general semantics is standard English, yet it involves selected and tested terms with unfamiliar structural assumptions, carrying far-reaching consequences. Thus, in the old way we used terms like 'emotion' and 'intellect' which imply the splitting of these manifestations. In general semantics we use the term 'evaluation' which does not involve splitting, although it covers the same field of reaction. Similarly, the Einstein-Minkowski non-split 'space-time' is usually translated, through habits of speech, into 'space' and 'time' which has implications of a split structure, abolishing entirely the work of Einstein, without which modern physics would be impossible.

Our daily use of language implies an aristotelian, two-valued ('either-or') anthropomorphic world of 'properties', which ultimately turns out to be, in principle, delusional. How much such delusions affect the individual depends upon his power of resistance to such a harmful neuro-linguistic and neuro-semantic environment.

The human world in which we live is based on modern science (constructively or destructively) and therefore on non-euclidean, non-newtonian and non-aristotelian systems, yet our inherited orientations remain aristotelian, euclidean and newtonian, which are quite different. Under such conditions optimum human adjustment is, in principle, impossible. Psychiatric students can readily understand that the world is afflicted with what may be called aristotelian maladjustment, neurosis or even psychosis. To remedy such conditions is difficult but necessary if we want to save our sanity.

In mathematics we use extensively the method of interpolation. In building curves we do not have all the points. We have a number of them and then connect the points with a smooth curve. The equation of that curve is given on the basis of the actual data involved. The nervous processes which build up equations are the same as those which build up ordinary generalizations in daily life; namely, we interpolate from the data we have. It is entirely disregarded even by mathematicians that when only one new factor enters, it may transform the curve entirely with a very serious change in the equation.†

¹ Alfred Korzybski, 'The Science of Man,' *American Journal of Psychiatry*, XCIII (May, 1937), 1349; 'Neuro-semantic and Neuro-linguistic Mechanisms of Extensionalization. General Semantics as a Natural Experimental Science,' *American Journal of Psychiatry*, XCIII (July, 1936), 31; 'Outline of General Semantics: The Application of Some Methods of Exact Sciences to the Solution of Human Problems and the Educational Training for General Sanity,' *General Semantics: Papers from the First American Congress on General Semantics, 1935, and Related Contributions*, collected and arranged by Hansell Baugh. (New York: Arrow Editions, 1938), p. 1; *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941), pp. 147, 358-360, 533-536, 553. [This title is abbreviated below to S&S.]

† See S&S, 'Introduction to the Second Edition,' p. xxiii, for further explication of this point.

As an example I can suggest the work of Professor Burridge,² who in addition to older physiological considerations did not disregard the colloidal structure of protoplasm and introduced that new unavoidable factor. In this case it does not matter whether the particular colloidal theory suggested by Burridge is correct or not. The fact that he introduced a new structural factor leads to entirely different interpretations and generalizations, etc. This requires a complete revision of physiology, neurology and in fact, medicine, and psychiatry, although the first order facts remain.

The same applies to the work of Dr. Petersen,³ who introduced the new factor of weather when dealing with patients; or Freud⁴ who introduced the unconscious or Einstein and others⁵ who introduced the finite velocity of light into the newtonian system, etc. In general semantics we introduce two new unavoidable factors; namely, our neuro-semantic and neuro-linguistic *environment as environment*, which also requires a radical revision of what we know and should particularly interest psychiatrists and educators. The old aristotelian two-valued orientations, resulting in lack of flexibility on the part of many scientists, accounts to a large extent for our tragic cultural lag, and the stubborn, blind entrenchment of the professions.

TERMINOLOGY

The word *semantics* is derived from the Greek *semantikos*, 'significant', from *semainein* 'to signify', 'to mean'. This term was introduced by Michel Bréal in 1897. Originally, and even today, 'semantics' is used for the most part in the sense of the 'meaning' of words as defined by words, and the significance of words as affecting human reactions has been neglected. It is true that the two terms 'meaning' and 'significance' somehow overlap, with a resulting confusion and difficulty of analysis. We use the term 'general semantics' in preference to the old 'semantics' to indicate a fundamental difference between the two. The older difficulties originated because specialists in the 'meaning' of words disregarded an unavoidable factor; namely, that any linguistic or mathematical theory must begin with undefined terms which cannot be defined any further by words. In principle these *undefined terms* are labels for direct experiences and observations which involve subcortical processes on the *silent (un-speakable) level*. Obviously no amount of verbal definition can convey to the individual first order pain, which he has to *evaluate* on the silent, organismal level inside of his skin.

The introduction of the terms 'un-speakable', or 'silent' level eliminates another serious source of confusion. We are accustomed to use the terms 'objective' and 'subjective'. Thus, the direct experience of, say a pinch, usually is called 'subjective', and, say an apple, is called 'objective'. The facts in the meantime are that both the apple and the pinch may be considered 'subjective' or 'objective' as we please, both being products

² W. Burridge, *Excitability, A Cardiac Study* (London: Oxford University Press, 1932); *A New Physiology of Sensation*, (*Ibid.*, 1932); *A New Physiological Psychology* (London: Edward Arnold and Co., 1933); *Alcohol and Anesthesia* (London: Williams and Norgate, 1934).

³ William F. Petersen, *The Patient and the Weather* (Ann Arbor: Edwards Brothers, 1935-38).

⁴ S&S, pp. 147, 516, 534-536.

⁵ S&S, pp. 644, 649 ff., 659 ff., 669 ff., 673.

of the nervous system. By accepting this unified terminology; namely, 'un-speakable', or 'silent' level, we automatically eliminate endless, useless verbal bickerings.

In general semantics we introduce a *general theory of evaluation* having very little to do with the meaning of words by verbal definitions. It is important to notice that the term 'evaluation' implies a special structure in that it applies to both 'emotion' and 'intellect', and even organismal evaluations such as 'senses', pain, pleasure, blushing, smiling, etc.

The term 'evaluation' implies also environmental factors because obviously there must be something to evaluate. Thus, evaluation is more than an organism-as-a-whole term; it is a *non-elementalistic term*⁶ because it implies inclusion of the environment. We need a special technique to handle such terms which I will explain presently.

STRUCTURAL REPRESENTATION, PREDICTABILITY AND IDENTIFICATION

Briefly we can say that *sanity* may be considered 'proper evaluation'. '*Mental illness* and maladjustments of every degree represent '*mis-evaluation*'. In science as well as in general semantics we test evaluation not by verbal definitions but by *predictability*, which must be verified empirically. If predicted facts happen, the evaluation was proper; if they do not, the evaluation was not proper. We see that we are dealing with a key problem of sanity which affects individual, national and international adjustment. The problems are of serious importance and so we have to discover the essential factors for predictability and therefore proper evaluation.⁷

Let us consider the relationship between a map and the territory it represents. Obviously for maximum predictability the map must be *similar in structure* to the actual territory. We consider structure as a bundle of *relations*, and similarity of structure in terms of *order*.

The benefits of using such a non-elementalistic term as 'order', which is a key term in general semantics, are manifold. For our purpose we need to consider only a few:

1. Exact sciences which have maximum predictability are based on multi-dimensional order. As we are living in a world of processes, we have to consider only four-dimensional order. As a matter of scientific advance, if we can put some human reactions in terms of order, we gain a bridging term between human affairs and exact sciences which allows us to build a *science of man*.

2. Ordering of human reactions, for which we need a special technique, and which is the main neurological mechanism of general semantics and of the non-aristotelian system, automatically introduces delayed reactions. These are predominantly cortical functions in contrast to the predominantly reflex, undelayed subcortical (mostly

⁶ See Korzybski, 'Outline of General Semantics,' pp. 14-16, 19, 22-24, 28; 'Extensionalization in Mathematics, Mathematical Physics and General Education,' Paper I 'The Extensional Method,' *General Semantics* (op. cit.), p. 33; Paper II 'Thalamic Symbolism and Mathematics,' (Chicago: Institute of General Semantics, 1941, mimeographed), pp. 3-4; S&S, index.

⁷ Paper I 'Extensional Method' (op. cit.), pp. 32-33; Paper II 'Thalamic Symbolism and Mathematics' (op. cit.), p. 3; 'Neuro-semantic and Neuro-linguistic Mechanisms,' pp. 29-34, 38; S&S, pp. 31, 294-295, 406 ff., 440 f., 448, 456 f., 466 ff., 488, 517 f., 532, 539.

thalamic) functions. The stress on delayed reactions is not new 'wisdom'. There is an age-old saying, 'When mad count to ten.' Practically all human maladjustments, including most neuroses and psychoses, involve undelayed reactions; hence the *preventive* and even therapeutic value of the introduction of permanent automatic delayed reactions, for a fraction of a second, which prevents 'emotional' outbursts.⁸

3. Automatic delay of reactions stimulates the cortex, which then performs its natural function of protecting the over-stimulated thalamus, resulting in the functional integration of the nervous system. This affects endocrine secretions, gonads included, blood pressure, etc., often with unpredictable psychosomatic beneficial effects.

4. Ordering, and therefore delay of reactions, transforms the animalistic infantile and 'mentally' ill *signal* reactions, which are reflex and undelayed, into adult, human and sane *symbol* (evaluational) reactions. This is tragically needed if sanity is to prevail, and can be accomplished by the application of physico-mathematical methods to life and daily orientations (evaluations).⁹

Let us investigate some pertinent *relations* between the map and the territory to discover some factors of the coveted predictability and therefore proper evaluation. We find that:

1. The map is *not* the territory.
2. The map represents *not all* the territory.
3. The map is *self-reflexive*.

It should be noticed that what has been said about a map-territory relationship applies mostly to other forms of representation, and certainly applies point by point to the language-fact relationship. Thus:

1. A word is *not* the fact, feeling, situation, relation, etc.
2. A word covers *not all* the characteristics of an object, situation, fact, feeling, etc.
3. Language also is self-reflexive in the sense that in language we can speak about language.

In general semantics we call these observations of language-fact relations the three fundamental non-aristotelian premises. The first two are quite obvious, and turn out to be a flat denial of the old aristotelian verbalistic orientations which, following the structure of language, became *evaluations as living issues*. They were silent assumptions in the old system, vicious because not recognized as such. The third premise indicates that an ideal map would include a map of the map, which applies to other forms of representation, language included. This characteristic of certain forms of representation was discovered by Professor Royce in probing mathematical difficulties, and labelled 'self-reflexiveness' by him.¹⁰

⁸ 'Extensional Method,' p. 32; 'Thalamic Symbolism and Mathematics,' p. 6; 'Neuro-semantic and Neuro-linguistic Mechanisms,' pp. 36-37; 'Outline of General Semantics,' pp. 16-17; S&S, index.

⁹ 'Neuro-semantic and Neuro-linguistic Mechanisms,' pp. 30-31; 'Outline of General Semantics,' pp. 5-6, 8-9, 12-15, 19-20; S&S, Ch. XXI, pp. 512-513; See Serge Chakotin, *The Rape of the Masses* (New York: Alliance Book Corp., 1940).

¹⁰ 'Extensional Method' (*op. cit.*), p. 33; S&S, pp. 58, 323, 739, 751.

PREMISE 1.—The old aristotelian orientations are based on the *is of identity*, which is invariably false-to-facts, as nothing is identical with anything else, and in a world of electronic, electro-colloidal processes even these processes are not identical with themselves.¹¹

In the psycho-logical and evaluational processes we mostly identify our verbal statements or judgments about the facts with the actual facts, which facts are on the silent un-speakable level, not on the verbal level. Psychiatrists know well enough the tragic consequences of identifications in their patients. What has evaded the attention of psychiatrists is permanent identifications in daily life, with harmful, even psychosomatic results. An illustration may be helpful. In my seminars I pick a young woman student and prearrange with her a demonstration about which the class knows nothing. During the lecture she is called to the platform and I hand her a box of matches which she carelessly drops on the desk. This is the only 'crime' she commits. I begin to call her names with a display of anger, waving my fists, and finally with a big gesture I slap her face gently. Seeing this, ninety per cent of the class recoil and shudder, ten per cent show no overt reactions. These latter have seen what they have seen, but they delayed their evaluations. Then I explain to the students that their recoil and shudder was an organismal evaluation very harmful in principle, because they *identified* the seen facts with their judgment, creeds, dogmas, etc., and their reaction was entirely unjustified, as it turned out to be merely a scientific demonstration of the mechanism of identification, which identification I expected. In the rough, the seen was on the predominantly subcortical silent level, the shudder was due to the predominantly cortical linguistic level.

A similar organismal identification is very well illustrated by a 'mental' patient of Dr. Prince who had hay fever. When Dr. Prince flashed paper roses from behind a screen the patient got an attack of hay fever, a profound organismal reaction without the physico-chemical stimulus of actual roses.¹²

PREMISE 2.—*Non-allness* expresses a flat denial of aristotelian verbalistic 'all-ness', which builds up faith in verbal generalizations and is responsible for most of the dogmatism, categorism, absolutism, as if some linguistic issues and creeds were valid 'for all time to come'. The tendency to generalize in the Pavlov sense does not give full play to human cortical differentiation. By disregarding such issues we canalize human nervous systems in animalistic reflex reactions.

Even in mathematics we learned only lately that generalizations from *some* cases to 'all' cases are often invalid. Unlimited 'all-ness' has led even to serious mathematical difficulties which only recently the mathematical theory of types of Bertrand Russell has tried to remedy by an introduction of the notion of 'illegitimate totalities'.¹³ Such mis-evaluations are common in life, leading to minor maladjustments and even to neurosis or psychosis.

PREMISE 3.—This premise describes linguistic facts which have been entirely disregarded in the past except in mathematics. In general semantics we discover that

¹¹ 'Extensional Method,' pp. 33-34; 'Outline of General Semantics,' pp. 7-8, 11-14, 17-21, 23-26; *S&S*, index.

¹² 'Neuro-semantic and Neuro-linguistic Mechanisms,' p. 30; *S&S*, p. 128.

¹³ 'Extensional Method,' p. 33; *S&S*, pp. 428 ff., 737 ff., 753.

self-reflexiveness is found at the bottom of scientific difficulties and life maladjustments. This disregard plays havoc with human evaluations, and results in endless verbalistic bickerings.

Biologically speaking, the survival mechanisms of the human organism are different from those of animals. Animals cannot 'talk' themselves psychosomatically into maladjustments and even disasters as we human beings methodically do. However, under laboratory conditions, when men play 'tricks' on animals, even animals break down and may exhibit experimental 'neuroses'.

Further analysis of this self-reflexiveness leads to the discovery of the multiordinality of the most important terms we use. Without the recognition of this multiordinality we are frequently led to the most pathetic confusions, and maladjustments of every degree.¹⁴

Multiordinal terms correspond to the multiordinal neuro-semantic and neuro-linguistic mechanisms which operate in us. Take, for example 'never say never.' Both words *never* look alike, are spelled similarly, yet they are on different levels of abstraction and have different values, one unlimited, limiting the other. Any statement about another statement is by necessity an abstraction of higher order than the first statement, involving new neurological processes.

Terms like 'yes', 'no', 'true', 'false', 'fact', 'reality', 'love', 'hate', 'doubt', 'evaluation', are multiordinal and the corresponding mechanisms can be applied to any orders of abstraction. As the spelling and pronunciation on each level is similar, because of the generalizing tendencies of the nervous system, we assume that they have the same extensional content, which as a matter of fact they have not. This misunderstanding produces enormous difficulties in adjustment, no matter whether we are morons or geniuses, as the kernel of the difficulty is neuro-linguistic and neuro-semantic. It is not to be solved without a thorough revision of our linguistic techniques, and our consciousness of the mechanisms is the only possible safeguard. We will return to this subject later on.

VERBAL MISREPRESENTATION AND 'FALSE KNOWLEDGE'

As we have seen, for maximum predictability and proper evaluation we must have a map-language *similar in structure* to the territory-facts. It is an *empirical* problem to discover by observation whether our language is similar in structure to the facts or not. Empirically 'matter', 'space' and 'time', 'emotions' and 'intellect', etc., cannot be separated or split, although verbally we can separate the words in a split language all we want to. Many spurious volumes have been written on such verbal splits. The simple fact is that nature is non-elementalistic whereas the structure of our language is elementalistic.

The physico-mathematical methods with their clear-cut, undefined terms, postulates, etc., bring to consciousness the assumptions, hypotheses, creeds on which any system of orientation or evaluation is based. Such methods lead to the elimination of 'false knowledge'. In our private lives we much too often act and react *as if* our con-

¹⁴'Outline of General Semantics,' p. 7; 'Neuro-semantic and Neuro-linguistic Mechanisms,' p. 34; S&S, index.

scious or unconscious false-to-fact assumptions were 'all there is to be known,' which actually generates false knowledge.

To give only one striking example, most of us are conscious of so-called 'sex', in the most naïve sense, on the assumption that the very limited 'sex proper' is 'all' of the function of the gonads, which assumption postulates false knowledge. The facts are that the gonads are internal secretion glands, that roughly speaking, nine-tenths of their function is to vitalize the whole organism, *brain included*,¹⁵ and only one-tenth of their function may be considered as 'sex proper', in the narrow sense. One of the reasons that psychiatrists have to deal so often with 'sex' difficulties is the false knowledge their patients have about the functions of the gonads. To my knowledge this formulation is novel, and has escaped the attention of psychiatrists. The point is that we are *directly aware* of the one-tenth functioning and, unless told by science, *entirely unaware* of the nine-tenths functioning. In general semantics we are interested in the neuro-semantic and neuro-linguistic functioning of the nervous system, not 'sex' in the narrow sense. As the two functions of the gonads are strictly interconnected, we shall observe, when we bring to consciousness these mechanisms that many 'sex' troubles disappear. We have many cases illustrating the working of these projection mechanisms. It is no longer a mystery that a great many psychosomatic difficulties arise on semantogenic grounds, and there should be no difficulty in understanding that when semantogenic disturbances are eliminated, which is the problem of general semantics, beneficial psychosomatic consequences should follow.

INTENSION AND EXTENSION

Investigating further the similarity of structure between language and facts, we find that the actual world is made up of individuals such as Smith₁, Smith₂, etc., chair₁, chair₂, etc., and that such words as 'man', or 'chair' are only labels for verbal generalizations, verbal definitions, and therefore ultimately verbal fictions. These simple and obvious observations formulate one of the most fundamental facts of nature and indicate serious structural discrepancies between the facts and our customary language.

Here we have to explain two new terms which were originated, if I am not mistaken, by Aristotle himself, although they were never applied in our sense; namely, *intension* (note the spelling with an 's') and *extension*.¹⁶ A definition by intension is given in terms of aristotelian 'properties'. For instance, 'man' may be defined as a 'featherless biped'. Such a definition applies to every human being yet covers no one. A definition by extension, which as yet is utilized exclusively in mathematics and general semantics, is given by exhibiting the individual. Thus by extension 'man' can be defined as a class of individuals made up of Smith₁, Smith₂, etc. When we introduce such an extensional structure of language and use it permanently as an inside orientation, profound, integrative, neuro-semantic and neuro-linguistic consequences follow.

¹⁵ Alexis Carrel, *Man the Unknown* (New York: Harper and Brothers, 1935), pp. 89, 105.

¹⁶ The problems are very complex and I suggest that the reader consult any book of 'logic' on this subject. Here we must limit ourselves to the problems of 'definitions.' See also 'Outline of General Semantics,' pp. 1-3, 8, 24; 'Extensional Method,' pp. 34-36; 'Thalamic Symbolism and Mathematics,' p. 6; 'Neuro-semantic and Neuro-linguistic Mechanisms,' p. 35; *S&S*, index.

NEUROPSYCHIC MECHANISMS

We consider linguistic issues as predominantly 'cortical' functions.¹⁷ So-called 'senses', 'emotions', 'pain-pleasure', blood pressure, etc., are known to be predominantly 'thalamic' functions. Experience shows that the 'cortex' and the 'thalamus' are very often poorly integrated functionally, and our main problem is to bring about a better integration if at all possible. We have on record many cases of verbally brilliant persons who have no contact with life and are maladjusted, in extreme cases often to the point of hospitalization.

As pointed out by Pavlov, the old brain shows a tendency for uncritical generalizations. The new brain introduces a tendency for differentiation of higher order. When too fine differentiation is imposed on the old brain, especially by pain or fright, there is a conflict, and that is exactly the mechanism by which experimental neurosis is produced in animals, and eventually in human subjects who have not been properly educated in the use of cortical differentiating mechanisms. Differentiation by the new brain in an integrated and mature nervous system does not introduce conflict but, on the contrary, regulates and protects the older brain.

In contrast with animals, the human cortex matures at approximately eighteen, and many differentiations acquired in childhood through fear or pain, etc., are mostly on the old brain level. This explains why many maladjustments, stuttering, neuroses and even psychoses, originate in childhood when the new brain is immature. What is 'learned' on the old brain level is 'learned for good' and often persists for life, which accounts for the difficulties of psychotherapy. Furthermore, in the human world the thalamus is as a rule over-stimulated, and one of the functions of the cortex is to protect the thalamus.

It must be clearly realized that the thalamus has no linguistic centers and so will not be affected directly by the old language of intensional structure, but it can be affected by extensional methods and extensional structure of language because thalamic factors are introduced. Consequently we must always watch for different cortical doctrines, creeds, etc., which mean verbalization or rationalization and which instead of protecting the thalamus add to its over-stimulation. Thus some individuals can talk themselves into serious maladjustments; they rationalize cortically their 'thalamic' patterns of conduct.

The cortex, in the terminology of Herrick,¹⁸ (1) has a dynamogenic effect, (2) produces a differential activation, functionally resulting in delayed reactions, etc. These separate aspects represent only verbal fictions or splittings; but the nervous system

¹⁷ Through lack of space and the difficulty of presentation of so complex a subject what will be said here will be over-simplified, not to be taken literally. Thus by 'thalamus' we mean predominantly the diencephalic region, which includes the hypo-thalamus, etc. By 'cortex' we mean predominantly the frontal and prefrontal cortical regions, but not excluding other cortical and subcortical levels. Dealing with electro-colloidal, functional and dynamic issues, it is impossible to be more specific without making misstatements.

¹⁸ See the following works of C. J. Herrick, *An Introduction to Neurology* (5th ed.; Philadelphia: W. B. Saunders Co., 1931); *Neurological Foundations of Animal Behavior* (New York: Henry Holt and Company, 1924); *Brains of Rats and Men* (Chicago: University of Chicago Press, 1926); 'Localization of Function in the Nervous System,' *Proceedings of the National Academy of Science*, October, 1930.

works as a whole and the verbalistic aspects do not exist or work in separation. There is, however, a *functional aspect* of the cortex which is not elementalistic; namely, to *delay the reactions*. Animal or 'mentally' ill reactions are of a reflex signal reaction type or an immediate response to a stimulus. There is no delay, which on human levels means allowing 'time' to pass the nerve currents through the longer paths of the cortex, resulting in the transformation of animal or 'mentally' ill *signal* reactions into human *symbol* reactions which involve cortical differentiation.

NATURAL ORDER OF EVALUATION

Returning to non-elementalistic order, we already established one scientific criterion for proper evaluation; namely, the testing by predictability. Here we give another fundamental criterion for evaluation; namely, what I call *natural order of evaluation*.¹⁹ It should be remembered that evaluation is not only a multiordinal term which applies to all known levels of abstraction, but represents also an irreversible asymmetrical relation involving 'more' or 'less', of the type: If *A* is more than *B*, then *B* is never more than *A*. In symmetrical relations, such as *A* is the spouse of *B*, or *A* equals *B*, then *B* is the spouse of *A*, or *B* equals *A*. In other words, the symmetrical relations are reversible.²⁰

In the natural order of evaluation,

- (1) The *process* 'apple' (biochemical features) is more important than the object 'apple' which our nervous system constructs.
- (2) The *object* 'apple' is more important than a description of the apple.*
- (3) A *description* is more important than an inference of low order.
- (4) An *inference of low order* is more reliable or important than an
- (5) *Inference of high order*, etc.

Our customary evaluation by the reversed natural order is bound to be pathological. According to the old orientation we disregard or do not know about the process character of say, 'apple'. We evaluate the object as the most important, which means we reverse the natural order of evaluation. In daily life, dealing with our own psychological reactions, we often give more value to our judgments, etc., which are higher order abstractions, than to the first order experiences, which are on the non-verbal silent level, and so of lower order abstraction. Here again we have a reversal of the natural order. Moreover we orient ourselves and evaluate by different creeds and dogmas which are highly inferential, and we treat them as descriptions, exhibiting once more the reversal of natural order.

It should be noticed carefully that those pathological reversals of the natural order of evaluation involve the identification in value of different orders of abstraction

¹⁹ S&S, see index.

²⁰ S&S, see index.

* Here the reader is cautioned against a common misunderstanding occasioned by the use of an 'objective' apple as an example. This formulation applies just as much to *e.g.* a 'subjective' pinch, psycho-logical reactions, etc.; see explanation of *silent* level, etc., in section on terminology.—Editor.

which as a matter of fact are *not identical in value*. I believe this is the mechanism which makes the reversal of the natural order of evaluation pathogenic.

Neuro-linguistic issues are involved here also. In the evolution of the human race and language there was a natural order established; namely, the facts came first and labels (words) next. Today, from childhood up, we inculcate words and language first, and facts next, another pathological reversed order. Thus we are trained in signal reactions where we identify words with facts. Even in medicine we much too often deal with 'diseases' instead of an individual sick person.

In general semantics we offer a technique to overcome that reversed natural order of evaluation, thus bringing about a new adjustment based on neurological grounds. Through the method of extensionalization, we train in delayed reaction and so in the proper use of the cortex, and thus even in early youth with the *immature human cortex*, a great deal of prevention can be accomplished. We train students in *consciousness of abstracting*,²¹ and therefore consciousness of self, including our neuro-semantic and neuro-linguistic environment as environment. This tends to eliminate self-consciousness which is harmful. We eliminate false knowledge and give the students non-technical, elementary, modern scientific knowledge in such fields as physics, mathematics, colloids, physiology, neurology, psychiatry, from a *biological* (survival) point of view.

We could eventually make a very simple formulation for psychotherapy. We deal as a rule with the reversal of the natural order of evaluation, so by reversing the reversed order, we restore the natural order of evaluation. This formulation sounds simple but it is not so simple in practice, as it takes months to achieve this new type of evaluation. The main benefit is that it gives the student or patient a thalamic method based on order, with which he can work at himself without outside help.

METHODS OF EXTENSIONALIZATION

To achieve the coveted thalamo-cortical integration through extensionalization, we utilize what I call the 'extensional devices', always using a slight gesture of the hands to indicate absolute individuals in space-time, orders of abstractions, etc., involving thus the kinesthetic sense, which is well-known to have an important bearing on our orientations.

The *extensional devices* are as follows: (1) Indexes, (2) Dates, (3) Etc., (4) Quotes, (5) Hyphens.

I call the first three 'working devices', and the fourth and fifth 'safety devices'. The application may seem simple when explained, yet it is laborious and difficult to acquire as it leads to a profound neurological re-canalization of a usually poorly integrated nervous system. What will be said here may seem too schematic; it conveys, however, some fundamental issues which are empirically useful. The main difficulty, I believe at present unavoidable, is based on the fact that in speaking or writing we have to use physiological or neurological terms, while in actuality the nervous system represents an electro-colloidal, functional, inter-related whole, in which every part is functionally related to every other part. With this *proviso*, I will proceed.

'Thinking' or evaluating in terms of intensional generalizations such as 'man',

²¹ Korzybski, 'Outline of General Semantics' (*op. cit.*), p. 20; S&S, see index.

'patient', 'disease', 'chair', etc., is predominantly cortical, and as we are actually dealing with individuals, not definitions, our neurological co-ordination with thalamic functioning is unsatisfactory, and there is a split between verbalism and the living facts. If we 'think' or evaluate extensionally in terms of 'Smith₁', 'Smith₂', 'sick Brown₁', 'sick Brown₂', etc., involving our kinesthetic sense by the use of our hands in ordering or differentiating the individuals, by necessity this automatically involves the cortex by inducing *delayed reactions*, and also automatically involves the functioning of the thalamic region by forcing us to 'think' or evaluate in terms of facts instead of definitions. Obviously this training in extension helps the integration of thalamo-cortical functioning. I must repeat that in practice the extensional technique works *automatically* when applied.

An illustration may be helpful, showing the harmful effect of some verbalizations. Thus Freud uncritically picked the term 'libido', and to his own detriment and the rest of mankind, spent a life-time explaining that his 'libido' is not 'libidinous'. Similarly Freud ascribed *one* undifferentiated 'sex' to infants which revolted public opinion. If Freud had used the extensional devices he would not have gotten into such difficulties. He would not have used the word 'sex' without indexes, dates and quotes, and he would have explained that an infant has a sensitive organ which could be labelled 'S₁⁰' at birth, 'S₂¹' at the age of one, 'S₃²' at the age of two, etc., which are obviously different although covered by the one abstract definitional 'sex', and made obvious only by the extensional techniques. Let us be frank about it. The intensional abstract 'sex' actually varies with every individual not only with age (dates), but in relation to endless other factors.

Similarly, the fact that often 'sexy' mothers distort the 'sex' in their daughters, sometimes for life, is known, and yet by the old intensional evaluation an explanation was not forthcoming. By extension the issues are rather simple. A daughter of six, who has S₁⁶, is exposed to S₂²⁶ of a mother twenty-six years old, which is entirely different, and may be frightened, horrified, disgusted, baffled, etc. Such a shock in childhood may play havoc with the rest of her life.

By intensional methods, dealing with definitions such as 'chair', 'fear', 'sex', etc., the thalamic factors are missing, as definitions have very little to do with life. In an extensional orientation, such as 'chair₁', 'chair₂', etc., we willy-nilly introduce such factors which will affect the thalamus. By intensional methods, the *differences* are, so to say, driven into the 'unconscious'; by extension, they are brought to consciousness at par with similarities.

The great mathematician Sylvester said rightly that in mathematics we look for differences in similarities and similarities in differences. It is a very pertinent remark and we should discover means for applying that to daily life. Most complex neurological processes are involved in such new orientations. An orientation by intension or verbal definition is based upon and emphasizes similarities; an extensional orientation emphasizes similarities *and* differences, in a world of absolute individuals and processes. For instance, the word 'chair' emphasizes similarities, and the indexed 'chair₁', 'chair₂', etc., makes us conscious of similarities *and*, through using indexes, of differences. That consciousness of differences and thereby of individuality, stimulates the cortex to its proper differentiating function, permitting its integrative effect. More than that, the

natural function of the cortex is to delay the reaction. If we orient ourselves in terms of 'chair₁', 'chair₂', etc., we *automatically introduce a delayed reaction*, with all the beneficial consequences.

A typical example may illustrate the process of extensionalization through the use of devices and how results are accomplished. In many cases 'hate' seems to be the predominant reaction, usually resulting from some childhood experience. Some persons are so overwhelmed by hate that they have no affective energy left for positive feelings, and together with other symptoms the picture may resemble strikingly 'dementia praecox' cases. I must stress here that the amount of affective energy in a given individual is finite and limited. If this energy is spent on hating, deadness appears in positive manifestation.

In most cases I know, directly or indirectly, the hate is concentrated on some member of the family, for example the 'mother'. But 'mother' is a generalization, and so by intension the hate is generalized to 'all mothers', which leaves the student lifeless, and in some cases I know, ready for hospitalization.

After a seminar course in extensionalization we explain to the student the nature of the problem and train him in indexing in his private life, in this case *allocating his hate*. We do not tell him 'love your mama'; just the opposite, we allocate his hate and encourage hate for 'that woman who bore him', a definite individual such as Smith₁. A very curious picture appears. The more he hates 'mother', the worse off he is. The less he hates the abstraction 'mother', and the more he hates the individual Smith₁, the better he gets, and positive feelings toward other people and himself appear.

After allocating this hate by indexing, even this hate is ultimately undesirable. We eliminate this individualized hate by using dates. We train the student to date the years of his life, to date the 'mother' and their relationship. Thus, obviously, if the student began to hate his 'mother' (Smith₁¹⁹²⁰) twenty years ago, both the student and the 'mother' were then entirely different persons, and their relationship was also entirely different. It is poor evaluation to generalize, and project the hate of twenty years ago on today's changed conditions. (Smith₁¹⁹²⁰ is not Smith₁¹⁹⁴⁰). By this procedure, which is a comparatively short one, even this individualized hate disappears. The adjustment of the student toward himself, the world and even 'mother' becomes as a rule quite good. From experience it appears that allocating the hate through indexing is a longer and more laborious process than eliminating the allocated hate through dating. This single example illustrates a general method which can be applied to a great many life situations, particularly those involving fears, inferiority feelings, frustration, etc., because identifications are so general and at the bottom of most maladjustments.

These methods apply also to a long list of disturbances known to have a semantogenic and therefore neuro-semantic and neuro-linguistic origin, such as some heart, digestive, respiratory or 'sex' disorders, chronic joint diseases, arthritis, dental caries, migraines, some skin diseases, alcoholism, etc. Such applications are verified by the experiences of my co-workers, physicians (mostly psychiatrists), educators, etc., and my own.

GROUP APPLICATIONS

I must stress that general semantics is not a medical science; we are not directly interested in the health, as such, of the students. Medical men may have difficulties in

understanding the non-medical procedure in our dealing with students, which is briefly as follows: students have to study the inductive text book *Science and Sanity* and eventually attend a deductive seminar of about thirty-six hours, which is followed by one or more hours of personal interviews in which the student is shown the application of extensional methods to his personal problems to eliminate harmful semantogenic factors in his life.

In the seminars, as well as in private conferences, I show all I possibly can to the eye, using diagrams on a blackboard, symbolizing issues by the use of actual objects and using gestures. I find this method very effective as it involves thalamic factors and the kinesthetic sense.

The passive, *listening*, 'father-confessor' method is no doubt effective in some cases, but it is a very slow and expensive process. As general semantics is educational, and re-educational, we *lecture* on sanity and *methods* of sanity, with a rather high percentage of beneficial results, in a comparatively short time. The psychosomatic results are really unpredictable and vary greatly. The mechanisms of these beneficial results are very complex, and as yet not fully understood. For instance, some students have nervous tics. As a rule, in the middle of the seminar course, with the acquiring of nervous balance, without ever mentioning those tics, they disappear.

Although general semantics is not a medical science, it has been a help to psychiatrists in dealing with patients. I refer, of course, to psychiatrists who have gone through training in general semantics. General practitioners have also found general semantics very helpful. The training in map-territory, language-fact relationships, the consciousness of abstracting, the non-aristotelian premises, the use of extensional devices already outlined, give to the students active methods to cope with their own problems.

It is suggested that the psychotherapy of any school, if at all successful, does nothing but extensionalize the patients by bringing them in closer contact with 'facts' and 'realities'; and this is done by individual private methods through the insight or ingenuity of the physician. Such particular methods may help patients here and there, but they cannot have general educational, re-educational and preventive value, which is the main aim of general semantics with its extensional methods. With the principles outlined in this paper, indicating unrecognized neuro-semantic and neuro-linguistic mechanisms, psychotherapeutic treatment would be more effective, shortened and therefore less expensive.

PREVENTIVE PSYCHIATRY AND SOCIAL IMPLICATIONS

Present day scientific researches and world developments show that the old aristotelian era is dying. The terrors and horrors we are witnessing in the East and the West are the death-bed agonies of that passing era. In passing eras, as history shows, the sufferings of mankind are acute, and generations to come have to pay the price in health and wealth. What interests us in general semantics most are the *new methods of destruction* of sanity and civilization, methods based on the '*war of nerves*' and *verbal distortion* introduced by sick Hitler and his sick associates, and aped by humanly ignorant Mussolinis and Mikados, who are fascinated by the success of the pathological performances of *verbal distortion* imposed upon the world.

We should notice the fundamental difference between propaganda, lying, trickery, deceit, etc., which may be 'dishonest', and *pathological verbal distortion*, which may be 'honest' as far as the patient is concerned. For instance, a paranoiac may believe 'honestly' that he is persecuted, and ultimately kill to 'defend' himself. Unfortunately only psychiatrists, familiar with verbal distortions of patients in hospitals, can fully understand this difference.

Another example of the pathological use of language which Hitler and his associates have introduced, is the complete disregard of language as language, and the rôle of language in human civilization. Like other 'mentally' ill persons they make promises and treaties today which are broken tomorrow. Like others 'mentally' ill, they can rationalize their actions by verbal distortions. Any one who studies hospitalized mental patients and their writings, or who will study carefully *Mein Kampf* and the speeches of various Nazis,²² cannot miss the points made here.

We should not minimize this sick use of language. Human intercourse and civilization under such verbal conditions are profoundly harmed. The disregard of the map-territory relationship and/or deliberate distortion of it, abolishes predictability, proper evaluation, etc., and so breeds fears and anxieties, etc. Today the unthinking masses are having their neuro-semantic and neuro-linguistic mechanisms *trained* in such pathological reactions, and their recovery will be difficult. If a Hitler and some of his associates were not in power and protected, they most probably would be confined. Those trained under such leadership, without protection, in many instances are bound to break down, as their orientations are based on false knowledge.

When a new weapon like the magnetic mine appears, it becomes a problem for experts in physics and engineering. How about a 'war of nerves', a 'war of verbal distortion', a 'war of linguistic pathology', etc.? How is it possible for ignorant, and therefore fearful, politicians to deal with such problems without relegating the solution to experts in such fields as neuro-psychiatry, anthropology and general semantics? The problems of human beings are much more complex than any magnetic mine ever was or will be. Yet politicians have never had wisdom and honesty enough, or perhaps knowledge enough, to know that human problems are self-reflexive and therefore beyond their ken at present.

If the governments of the world had employed such a group of experts years ago, as a part of their duties they would have studied *Mein Kampf*, which politicians did not read or understand. Evaluating the tragic situation, they would have reported officially years ago that a sick man is getting into power, and could have predicted the consequences. With that enlightenment, those in power could have met the situation more intelligently, and thus avoided the unbelievable blunders such as appeasements. More than that: If such an inevitable diagnosis by government experts had been officially published, even the people under 'mentally' sick rulers would have refused to follow their leadership. The world is learning its lesson too late.

The conditions of the world are such today that private enterprises, professional opinions of scientific societies, or even international congresses are ineffective. Only

²² Adolf Hitler, *Mein Kampf* (New York: Stackpole Sons, 1939); Hermann Rauschning, *The Revolution of Nihilism* (New York: Alliance Book Corp. 1939); *The Voice of Destruction* (New York: G. P. Putnam's Sons, 1940); Serge Chakotin, *op. cit.*; Hervey Cleckley, *The Mask of Sanity* (St. Louis: C. V. Mosby Co., 1941).

governmental interest and backing can organize and enforce a serious movement for sanity, the more so that scientists and educators do not have the necessary time, money, authority or even initiative to carry forward a concerted plan.

What psychiatrists [and educators] as a professional body can do is to urge by all means available, such as scientific papers, popular lectures, articles, etc., that the governments should officially employ experts in neuropsychiatry, anthropology and general semantics to guide mankind toward sanity. That this has not been advanced or done before seems incredible, but at present it is unavoidable if sanity is to be restored or saved. The health of the neuro-semantic and neuro-linguistic human mechanisms is more important and difficult to take care of than any other branch of human endeavor.

As in general semantics we are concerned with the sanity of the race, including methods of prevention, I strongly appeal to psychiatrists as specialists in 'mental' illness, and therefore uniquely competent, to co-operate as a profession in such a gigantic task of post-war educational reconstruction to save for civilization whatever there is left to save, and to build from the ruins of a dying era a new and saner society.²³

²³ For an extended bibliography, the reader is referred to *Science and Sanity*, [2nd ed.] pp. liv-iv, and 783-798.

See also 'Some Non-aristotelian Data on Efficiency for Human Adjustment' by Alfred Korzybski, Part IV, this volume.—Editor.

GENERAL SEMANTICS: A DISCUSSION

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EDITOR'S NOTE: *The editor and the officers of the Congress are indebted to Doctor Meyer in many ways. Not the least of these was his presence at the Congress. His active participation lent added significance to the proceedings at many of the sessions. The fact that Doctor Meyer, originator of psychobiology, could be with us to introduce Alfred Korzybski at the opening of the Congress was particularly happy and appropriate, since his work contributed fundamentally to Korzybski's formulations of general semantics as a natural science. The first meeting of the psychosomatic section was largely devoted to Doctor Meyer's discussion of psychobiology covering his own and Doctor Rennie's papers as announced in the program. This discussion as well as the introduction and Doctor Meyer's comments at other meetings of the Congress were spoken extempore. Unfortunately, they can not be reproduced since the Congress budget did not provide for stenographic reporting of the proceedings. This is an irreparable loss but we are glad to be able to publish here Doctor Meyer's discussion of general semantics on another occasion. The following paper is based on a stenographic report of his comments on Korzybski's paper, 'General Semantics, Psychiatry, Psychotherapy and Prevention,' as presented in abridged form before the American Psychiatric Association, Cincinnati, May, 1940. We are grateful to Dr. C. B. Farrar, editor of The American Journal of Psychiatry, for making the transcription available and to Doctor Meyer for his own editing of the text and for permission to publish it.*

A demonstration of apparent approval and expectation is one thing; to meet the occasion in fact is a different thing. I have for many years been interested in Count Korzybski's formulations, and I have had numerous contacts with him, and also have had contact with his manuscript which it is impossible to give in the few minutes he has had.

I do think this problem of general semantics is capable of the same kind of simplicity and demonstration that practically all our scientific operations can have. It is difficult, however, to get examples that immediately will carry to anyone what one wants to imply. When I begin to talk about semantics, I have to take my own evaluations and conceptions, my own starting point, and so on. If I take Count Korzybski's example of this supposed relationship of Chicago and San Francisco and New York, I suppose it never would occur to me to get first Chicago, and then without an application of allocation and order, San Francisco and New York. To me that notion, if I entertain it at all, is once and for all arranged in a certain order that is factual, and then my talking will have to adapt itself according to what I want to do to Chicago and to San Francisco and to New York. If it is to be anything like a map, I know that I will have to buy one, if I can't arrange it in my own mind, but I just would not be able to think in other words than that *here* is San Francisco, *here* is New York, and I am talking of Chicago which is in *between*.

The whole problem that Count Korzybski is interested in is to find the place for the symbols that we use, the signs that we use, the semantics that we acquire. Semantics means the theory of sign function. Now that seems to me to coincide with my specification of mentally integrated functioning, at any rate, a great part of it. I would say that there is evaluation introduced between a stimulus and an expected event, as additional data that inserts itself—action, but action that includes symbols, that includes ideas.

I would say the simple biological reaction would be a stimulus and then the result through combination of 'reflexes', but there is in our 'mentality' or through the fact that we are 'mentally' integrated, the inclusion of a remarkable system of symbol formation that we then call mentality. The stimulus and the result in a 'physical' event does not have to have those intermediaries, but when we meet, for instance, a situation like this in which I find myself, I see the audience with an expression of attention, I have then to reach the goal of arriving at a statement concerning which I start out, with such-and-such a problem stated, such-and-such a result to be attained, the necessity of introducing symbols in the form of language. It is a question, then, how to use language. What is the position of language? What shall we do to bring the symbols or signs we use into such harmony with the facts that when they are used in logical operation, they lead us to the proper result?

Now I have myself a conception of semantics which runs about like this: All the things that preoccupy me are supposed to be data in connection with which I propose the problem or the solution to be attained. We are occupied as physicians very largely with mental disorders. We are occupied with simple tasks as well as with complex ones. I would say a problem of *physics* would be a stimulus and the reaction in which no particular sign functions are needed except as words or indicators, but not as elements in the problem or process. In our problems we may start out with things that are already symbols at work. When I spoke of the fact that I see you in this audience in an attitude of attention to the development of a problem; namely, that of illustrating semantics, I start not with you as 'substances' and as 'objects', but with the interpretation that I put upon you as in a state of anticipation, and in that functional state of my audience, I have to insert my problem, and then the result will be what you will be after my attempt at formulation and explanation has been put before you and has become part of you. Count Korzybski has used the term '*schizophrenia*'. He points out the fact that schizophrenia is not something that you can identify as one might identify a chemical substance. The word '*schizophrenia*' is not the schizophrenia as an entity. To us the word *schizophrenia* is a sign that stands for a combination of data and developments. We have to define that and we know that definition of the mere word as mere mental activity, or 'split mentation', does not help us very much. As persons from the western civilization, we are in a habit of starting from what we call data or facts. We have to learn to see those facts in such combination as to give us the satisfaction of a feeling of understanding.

Now I would say give me data, give me sense of facts in which I do not ask for the definition of the word '*schizophrenia*' primarily but for samples of data. I ask where do those samples occur. Give me instances, and tell me under what conditions do they occur, how do they operate, how do they work out, to what extent do they at-

tain a range of predictable results and evidently a certain set of facts of that sort, that will give me the material for the formulation of schizophrenia. Under what condition does that group of data that are indicated; namely, mental disorders of a certain type that have a tendency to pass into a specific type of deterioration, under what conditions do they occur? What are the factors that enter into them? How do they operate, with what range of predictability and likelihood and with what range of modifiability? That to me is the evidence we require, not a long disquisition on our *term*. We want to know that the term is as significant as possible, but we need the factual data. We want to see what facts we have to specify in order to be sure of what we are talking about and what we are operating with. We have to learn to make those selections that Count Korzybski has urged us to make and we make them according to the role in which they operate and according to the predictability of the service of those facts when we have established them.

So the primary thing is perhaps not the 'semantics' but the general attitude towards knowledge and our knowledge inevitably is no longer the knowledge that figured very largely with Aristotle; namely, that of starting with an idea, taking the facts for granted. I am sure that if Aristotle should come among us, he would not be a bad semanticist. The semantics that are attributed to Aristotle are made for a different mode of thinking. Our mode of thinking has become the 'objective' attitude of stating the 'facts', determining the facts that have operative value and seeing how they operate, with what particularity and with what range of modifiability.

I do think that Count Korzybski is right if he says that our language and the use of language is still very much abused or misused. We have got to know that language as such gives us data which we can say are orderly or are not orderly. They have logical (= verbal) sequence and imply factual sequence or they do not. If they have logical sequence and refer to data of which we can furnish the samples and then the facts that operate and so on, and can prove that we really have facts the operative value of which allows predictability and results according to assumptions, then I think we have not only a fair indication of what we expect of any dependable semantics, but we have a proper attitude of mind and the proper attitude of mind is that of realizing that we are organisms which receive various impacts, and the impacts upon us are not simple, they are history-making, they are complex. We ourselves are rather complex and we have then between those two complexities to find the simple terms that have the logical simplicity and logical value, but also the correct reference to the fact.

I would say any practical situation has got to be defined not in terms of words, but we have to make the words good enough to lead us to the facts that are talked about and wanted. Then we have to trust that we are able to replace our successive thinking of words, replace them by the non-verbal or verbal thinking of the facts that we want to see operate and we want to see that our conclusions are logically, i.e. verbally and conceptually, correct, and that they are real, and always open to being tried out.

The aristotelian conception was perhaps very much better than it is made out to be. It has been terribly misinterpreted and very largely through the fact that there was the idea that after all words were taken for the primary thing, that the facts in

a word are just examples of that heavenly wisdom that is inherent in words. Things are not that way for us. Therefore, we tried to build a semantics that is placed upon continual trial along experimental or quasi-experimental direction, and we have to see that our use of words is controlled and adapted by the actual, and wherever possible dated, evidence.

The hope of Count Korzybski that the world will profit a great deal by being conscientious in the use of terms and their application and their continual control is perfectly correct. It is, I am sure, very largely due to the looming up of ideas that are attached to words, that have produced that extremely extraordinary conception of anthropology and of race theory which has done so much to miseducate the German people. The idea of races and things of that sort that is put before them is a word, a campaign word, and the facts have not been controlled, are not under such considerations as are implied here.

So it is with so many other things. We are bound by and dependent on words. It is unfortunate that we cannot realize that the development of man is carried largely through the acquisition of language, that language first consisted of the amplification of the activities which had to be regulated just as physical and chemical happenings take place.

Then there came the possibility of 'noises', and having noises it was very significant that in use by other individuals the same kind of attitudes and reactions that are in the person that makes the noise became apparent and shared, and then there was a mass of differential noises which finally are written down and can be analyzed. That has given us the language and the grammar and the writing and philology, and it has given us that for consideration of the essentially semantic character at its very best in mathematics, but demanding just as much accuracy in the non-quantitative as in the quantitative terms. It would be unfair to expect of Count Korzybski the possibility of bringing before us in a few words the whole pertinence of his formulations. I suppose that when he is in his circle, in his seminar, questions are brought up by the audience; he brings in his comments and his corroborative connotation, and results will occur. I have no doubt that you also have a starting point for the testing out of what is meant by general semantics in the instances that he has given, but I think on the one hand the problem is simpler than he has put it, and, on the other hand, it is immense.

Book Two

HUMAN ADJUSTMENT

**METHODOLOGICAL FOUNDATIONS FOR NEURO-SEMANTIC
AND NEURO-LINGUISTIC INTEGRATION OF PERSONAL
AND SOCIAL LIFE IN OUR TIME**

PART I

Neuro-Semantic and Neuro-Linguistic Factors in Medical Science
and Practice, Neuropsychiatry, and Related Specialties

Section A



NEUROPSYCHIATRIC FOUNDATIONS AND CLINICAL APPLICATIONS OF GENERAL SEMANTICS

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General semantics designates a general theory of human evaluation, representation and communication formulated by Alfred Korzybski in 1933.¹ The term *semantics* was adapted by earlier writers from a Greek root translatable as 'meaning', *significance*. In brief, where *science* concerns itself with fact to fact relationships, *logic* with word to word relationships, *general semantics* deals with the relations between facts and words. These relations between empirical happenings and their symbolizations involve complex neurophysiological processes of abstracting, the representation of abstractions by various types of symbols and the reflexive effects of symbolism upon further abstracting. Human knowledge has thus a circular, or more strictly speaking, a spiral structure and because of this fact a general epistemological theory, or 'knowing about knowing', becomes essential to human development.

Unlike previous epistemologies, 'psychologies of knowledge', theories of symbolism, etc., general semantics is not speculative but experimental. It is based upon contemporary neurophysiological and neuropsychiatric research and constitutes the first empirical, strictly biological theory of evaluation. It is 'not a medical science but, like bacteriology, it is essential to general medicine and psychiatry'.² Medicine, without psychiatry and psychosomatic considerations, would be little else than elaboration of veterinary science. Psychiatry, without a general theory of evaluation based on human neurophysiology, comparative anthropology, etc., becomes a congeries of old and new metaphysical systems, speculative 'psychologies' and pseudoscientific gossiping. No one will deny the polemics of schools, the confusion of tongues and the conspicuous lack of a unifying doctrine based on human biology and comparable in methodological efficiency to the physical sciences. As psychiatrists, dealing with personal (and social) problems of evaluation, in addition to the risk of being misled by our own personal biases, we may unavoidably be misled by our own language, principally because we have lacked a *general theory* covering these aspects of human reactions.

It is not denied that certain schools, e.g. the freudian, within psychiatry have not only sensed this state of affairs, but have devised procedures to eliminate the personal bias by developing standardized techniques and constructing their own terminology. And there is also a constructive trend toward the utilization of comparative data from the study of societies outside the community within which the psychiatrist and the patient function. Nevertheless, despite the accumulation of valuable data, much of it is vitiated by the underlying (and mostly unconscious) assumptions implicit in their

¹ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

² Alfred Korzybski, 'General Semantics, Psychiatry, Psychotherapy and Prevention.' Paper read before the American Psychiatric Association at Cincinnati, Ohio, May, 1940. Abridged version *American Journal of Psychiatry*, XCVIII (September, 1941), 203-214.

terminologies which directed both the selection and formulation of data. The very instrument of investigation and communication—*language* itself—has been neglected.

The role of language in human affairs was sensed intuitively long before scientific recognition of the problem was necessitated by the breakdown of individuals and social institutions. Apart from the sterile contributions of earlier 'philosophers' and philologists little was done about language until the growth of the physical sciences necessitated better forms of representation. With the development of mathematical language (obligatory in science because of the inadequacy of ordinary tongues), an interest in the process of symbolization and the structure of symbol-systems appeared. Mathematical logic developed and influenced the epistemologists, logical positivists and others.⁴ Investigators became preoccupied with the invention and structural characteristics of various symbol-systems as forms of representation for physical or epistemological data and as interesting devices in themselves (e.g. 'pure' mathematics, 'logic'). The use and abuse of classical 'logic' was investigated. The insufficiencies of ordinary language were recognized. New forms of ordinary communication, such as different 'international' languages were devised to overcome some inadequate features and other shortcomings of language. But no investigators, until Korzybski,⁵ treated language, and symbolization in general, as forms of human behavior which could have constructive or destructive effects upon human survival because of the unexpected structural implications.

NEUROPSYCHIATRIC FOUNDATIONS

HUMAN BIOLOGY AND TIME-BINDING

Searching for a sharp distinction between human and animal biology, Korzybski found it to lie in the capacities of human nervous systems to represent their experiences by varieties of communicable symbols which could be accumulated and transmitted to subsequent generations. By neurological means human beings built an environment of symbol-systems which, like any other stimuli, condition adaptation. Individual experience could thus be summarized, accumulated, transmitted as racial experience and influence the conduct of future generations. Obviously this is the source and mechanism of what the anthropologists call culture. Systems of symbols standing for collective experience constitute a culture and appear in protean forms ranging from material culture (implements, buildings, etc.) through the arts (dance, music, sculpture, etc.), to customs and languages (mythologies, mores, doctrines, social systems, sciences, etc.). This process of symbolization which made possible the accumula-

⁴Of little practical value to psychiatrists but of great theoretical importance because of the light they throw upon symbolization in general as a form of human activity; the interested reader is referred to the introduction to Russell and Whitehead's *Principia Mathematica* (Second edition; Cambridge: Cambridge University Press, 1925) and to recent individual works by these two authors. The following, among other works, should also be consulted: P. W. Bridgman, *The Logic of Modern Physics* (New York: The Macmillan Co., 1927), Rudolf Carnap, *The Logical Syntax of Language* (New York: Harcourt, Brace and Co., 1937), C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (New York: Harcourt, Brace and Co., 1923), and the contributions of R. Carnap and C. W. Morris in *The International Encyclopedia of Unified Science* (University of Chicago Press, 1938), Vol. I, nos. 2 and 3.

⁵Alfred Korzybski, *Manhood of Humanity: The Science and Art of Human Engineering* (New York: E. P. Dutton and Co., 1921), and *Science and Sanity*, *op. cit.*

tion of the experiences, evaluations, etc., of individuals for racial purposes, Korzybski designated as *time-binding*.⁶

Time-binding is made possible by the development of the human neopallium, which functions as the 'organ of time-binding'.⁷ William Alanson White pointed out that because of the time-binding function of human nervous systems biology has acquired, at human levels, a new dimensionality—'a temporal coordinate'.⁸ Human environments are predominantly the products of time-binding (symbol systems of various kinds), and even many of their material aspects are modified through symbolically transmitted experiences, needs, etc., so that objects themselves become symbols for evaluations. We are taught to react more to the 'meanings' or significance or accepted evaluations of items in our natural environment than to the actualities themselves. And, as has happened repeatedly in the history of human society, environments may be modified to the point of pathogenesis so that individuals and nations may disintegrate and perish for their abstractions. Pavlov, the great Russian brain physiologist said: '... men are more apt to be influenced by words than by the actual facts of the surrounding reality.'

Neurologically considered, symbolization occurs at later stages of processes which begin at receptors in direct contact with the internal or external continuum of events of which the 'organism' is a phase. Physico-chemical mechanisms account not only for irritability (or the responsiveness of living tissue to varieties of stimulation such as mechanical vibrations, temperature changes, oxygen deprivation, food and poisons, etc.), but for the initiation, transmission, and modification of nerve impulses. Varieties of electro-chemical waves originate in specific receptors, such as those of smell, vision, hearing, touch, muscular movement, pain, etc., and course along peripheral nerves into trunk lines and thence to groups of neurones (nerve cells) located nearby or within the cerebrospinal nervous system. These concentrations of neurones, and their interconnections called synapses, are spoken of as 'ganglia', 'nuclei' and 'centers'. Since, through physico-chemical processes, they function to sort and redirect, to condense and amplify, etc., the impulses reaching them and to initiate new types of impulse directed toward other centers or toward effector tissues (such as muscle fibers and glands), they may more appropriately be designated as *stations* on dynamic neural pathways. Nerve impulses travel at measurable velocities (much more slowly than electricity) which vary according to the type of tissue initiating, conveying or modifying them. The fact that they have *finite velocities* establishes a temporal sequence of activation in the nerve fibers, stations and effectors they stimulate. An *order* of activation is thus established.

⁶ Alfred Korzybski, *Time-binding: The General Theory*. Presented before the International Mathematical Congress, Toronto, Canada, 1924; *Time-binding: The General Theory*. Second Paper, presented before the Washington Society for Nervous and Mental Diseases, 1925; and the Washington Psychopathological Society, March 13, 1926 (First paper published by E. P. Dutton, 1924: second paper by the author, 1926. Both out of print but available in leading libraries); *Manhood of Humanity*, *op. cit.*

⁷ See C. Judson Herrick, 'A Neurologist Makes Up His Mind,' The Mellon Lecture, University of Pittsburgh School of Medicine, May, 1939. *Scientific Monthly*, August, 1939. (Reprint; Chicago: Institute of General Semantics).

⁸ William A. White, *Twentieth Century Psychiatry*, The Salmon Memorial Lectures in Psychiatry for 1935 (New York: W. W. Norton and Co.).

LEVELS OF INTEGRATION

Stations within the nervous system may be grouped according to their spatial arrangement and their functions. Peripheral ones have relatively simple functions while central stations show progressively more complex activities as they are arranged in a forward or upward series from spinal cord to cerebral cortex. They are spoken of as *levels of neural integration* because each higher level in the series has an integrating effect on the activities of those below, or preceding it. Thus unitary actions, such as the contractions of single muscles, are co-ordinated to provide useful action of a limb as a whole; the movements of single limbs are integrated with each other and with trunk and head movements for the maintenance of posture or locomotion; these movements of skeletal muscles are further integrated with visceral activities (such as the circulation of blood, respiration, digestion, and the secretions of various glands), which affect the supply, allocation and conservation of energies necessary for action of the organism-as-a-whole; and these more or less automatic, organismal processes are further integrated with the activities of higher levels concerned with adaptation to the human social milieu. At this level the neuro-evaluational and neuro-symbolic functions of the human cortex can, or ought to, integrate all lower levels in the interests of survival.

The principal function of the human cortex is obviously to mediate highly flexible adaptations to environmental circumstances. Through its capacity to investigate and analyze happenings in a changing human milieu, the human cortex can discard obsolete forms of adaptation and acquire new. As Pavlov has pointed out, it is the agency for making temporary reflexes appropriate to the ever-changing circumstances of human existence.⁹ In early childhood and in old age when higher cortical levels are either non-existent or not functioning as well as formerly, and in disease processes interfering with cortical function, the capacity to make flexible adaptations ('temporary reflexes') is restricted. Rigidity or stereotypy of reactions is apparent. Previously acquired but discarded patterns of adaptations are reactivated. When such a type of response occurs during adulthood and prior to the senium, reactions appear childish, compulsive, dogmatic, etc., or may become so psychopathic as to interfere with social adaptation and require psychiatric care. When cortical functions are disturbed, experience is not properly evaluated so that misinterpretation of the neuro-symbolic environment occurs.

Due to the slower maturation of human nervous systems (higher cortical functions being in abeyance before the fourth or fifth year and not fully mature until late adolescence) conditional reactions are established at subcortical levels first. As the cortical analyzers develop the nerve impulses may travel longer circuits; differentiation and synthesis of incoming stimuli occur and so-called 'inhibition'¹⁰ or even extinction of earlier, lower level reactions follows. Speaking roughly, the cortical regions direct the diencephalic and lower regions. When cortical analyzers are included in the cir-

⁹ Ivan P. Pavlov, *Conditioned Reflexes and Psychiatry*, edited and translated by W. Horsley Gantt (New York: International Publishers, 1941).

¹⁰ Korzybski, applying Herrick's analysis of 'inhibition', suggests using the terms *positive* and *negative excitation*. It is a matter of orders of excitation, cortical centers reinforcing or altering ('inhibiting') the excitations from lower centers. See *Science and Sanity*, Chs. XXI, XXII.

cuits of nerve impulses there occur automatically and integrally, as Herrick points out, *differentiation* (analysis-synthesis), *delaying* of reactions (so-called 'inhibitors'), *differential activation* of lower centers, and *dynamogenic effects*. At times the delay in reactions due to these cortical actions involves the postponement of certain activities over years of time, as for example, when marriage is postponed in the interest of professional attainment. It is through this cortico-diencephalic relationship that the values men live by may control, alter, or redirect the impulses arising from lower centers. The drama of human ambition and conscience overriding more primitive biological cravings, so-called 'instincts', finds its neuro-physiological basis in such mechanisms. These higher cortical agencies of integration are therefore essential for human survival. Impulsive, undelayed, 'short circuit' reactions mediated by subcortical stations belong to animalistic, infantile, and primitive types of adaptation. Being diffuse, automatic reactions, of a generalized type, they are increasingly maladaptive in proportion as the environment and its demands upon the individual become more complex.

ABSTRACTING AND SYMBOLIZATION

Each station or level in this dynamic configuration reacts in a characteristic way to certain features of the physico-chemical nerve impulses. Thus the thalamic nuclei in the diencephalon probably synthesize various modalities of sensory impulses and contribute a crude type of affective tone. Higher stations in the cortical region differentiate, store and associate the streams of impulses reaching them to build up varieties of imagery set in a space-time framework of consciousness, so that present experience may be compared with past (memory) and their products projected into the future as fantasy, foresight and planning. At these higher levels where imagery occurs certain features of a collection of data are selected: a figure is recognized against a background. From such constellations, details or parts may be isolated to function as forms of representation or symbols. And these may be projected to the outer world through the motor system as gesture, model or speech-sign. To this immensely complex and as yet only partly understood process, Korzybski has applied the generalizing term *abstracting*.¹¹

When cortical levels of integration are activated and symbols are produced the process of abstracting does not stop. Inferences may be abstracted from descriptions and further, higher order inferences made from them. Classification and groupings of data are made by abstracting relevant characteristics and leaving out others. Symbols for these abstractions may be further abstracted as when a gesture of a limb represents a symbolic movement of the body as a whole, a single line is used to stand for a complete drawing or one word denotes a statement, a theory, a culture system. We utilize symbols for descriptive, inferential, classificatory and other high order abstractions from abstractions as instruments of communication and investigation and there is no limit to their production. It is by these mechanisms of producing higher orders of abstractions that humans create their own cultures.

SYMBOLISM AND BEHAVIOR

The symbols of language are the principal forms of representation in human environments. To these—and other symbols—we learn certain reactions during va-

¹¹ Alfred Korzybski, *Science and Sanity*, Ch. xxiv.

rious phases of our education. Our reactions to the symbols of language will show varying amounts of commonality with the reactions of other people. Upon the similarities, agreement will be based and communication established. Differences in reactions contribute to uniqueness or individuality in behavior and, eventually, to lack of agreement between people due to inability to communicate or exchange evaluations. Reactions to verbal symbols are learned by associations, by repetition, and by other well-known mechanisms involved in conditioning nervous systems.¹² Our reactions to the symbols of language constitute the 'meanings' or evaluations, personal or public, for which those symbols stand. By manipulating the verbal symbols of a community, for whatever purpose, it is possible to influence in one way or another reactions of each individual in that community.

The principal sources of human maladjustments are to be found in the way humans represent or symbolize their experiences and in the way they react to their own and other people's symbolizations. When we do some 'thinking', or what might be more appropriately termed 'talking to ourselves', we must perforce do so with the symbolisms current in the community into which we have been born. Russians, Americans, Chinese, etc., cannot 'think' alike without a common tongue. And when we react to the communications of others, we tend automatically to adopt the assumptions and evaluations implicit in the language used.

In terms of Korzybski's map-territory analogy we will become maladjusted if we do not make correct-to-fact verbal maps or if we accept uncritically those map-statements given us. It will be recalled that any map can be a reliable guide—that is, give us predictability—only if it is similar in structure to the territorial facts. When we observe the relationship of a map to a territory, three direct observations may be made:

1. The map is *not* the territory.
2. The map does *not* represent *all* characteristics in the territory.
3. The map is *self-reflexive*; that is to say, there could be a map of a map, and so on, each map leaving out characteristics in previous ones and each being different from others and serving different purposes.

These principles of map-territory relationship apply to any form of representation which human nervous systems may construct or to which they may react. Thus, a notion, a 'mental' image, a memory or a verbal statement is not the object or situation represented. Nor does any notion or statement cover all the known or yet to be known facts. Finally we can make statements about statements, have symbols for symbols, without end; but since each statement or order of abstraction is formed by leaving out characteristics in the original, they are therefore neither 'identical' nor even equivalent.

TYPES OF DISTURBANCES

Disturbances of these neuro-semantic mechanisms are responsible for most psychopathology. The minor, but often ludicrous or embarrassing misunderstandings which crop up in the conversations of everyday life and are common to all of us, exemplify these semantic mechanisms as well as the costly and often dangerous reactions of the

¹² Pavlov, *op. cit.*

'mentally' ill. Human reactions consequent upon the faulty production or interpretation of symbols, i.e. upon disordering of the abstracting process, may be termed *semantogenic* disturbances. Formerly they were called 'emotional' or 'psychogenic', but these terms should be discarded because of their misleading, elementalistic implications.

Two groups of semantogenic disturbances may be discerned in the wide range of clinical material studied by modern psychiatry. One group involves disturbances in the *production* of forms of representation; the other results from *disordering* or *confusion* of neuro-psychic evaluating mechanisms. They are necessarily interconnected. They may coexist to varying degrees and a given clinical picture is usually the resultant of the proportions in which these two mechanisms are present.

Disorders of *production* exist in purest form in cases of so-called feeble-mindedness. Defects of brain structure-function, from whatever cause, will necessarily limit the capacities of an individual adequately to evaluate or symbolize his experiences or to avail himself of the linguistic currency of his times. As a result, his ability to communicate with others will be restricted. This may lead to complete helplessness with the consequent need of personal or institutional care. If the brain defect is not too great, an individual may, like Helen Keller, find substitute media of expression and achieve an adequate and even high degree of communicability. While many of such cases are due to hereditary or developmental defects of the nervous system, a large proportion result from temporary intoxications, from infections or from vascular disease, new growths, and degenerations. Often such disorders can be remedied by medical or surgical intervention. Special types of re-education are playing an increasingly important role in enabling some of these cases to acquire or regain adequate means of communication.

Disorders of *interpretation* are divisible into misrepresentations of one's own experiences or of the communications from others. The mis-interpretations may, in either case, be *focal* or limited to a narrow range of symbols or they may be *diffuse* and apparently unlimited. For example, an individual may either mis-evaluate his own 'thoughts' and feelings or the report that others give him of their 'thoughts' and feelings. He may do both. And he may have disturbed reactions only to certain of his own or other people's evaluations or to whole fields of symbolism. Interpretative disorders may also result from intoxications and infections, as in drug addiction or the delirium of fevers, and from other injuries to the structure of the brain, but most are due to faulty semantic mechanisms.

VERBAL STATEMENTS MAY REFLECT PSYCHOPATHOLOGICAL MECHANISMS.

OBSELETE STRUCTURAL IMPLICATIONS OF ORDINARY LANGUAGE

Perhaps the simplest and commonest type of mis-evaluation, present in all of us, results from the *structure* of language. Patients and others frequently say 'My mother made me sick,' 'My husband did this to me,' etc. As children they have heard expressions of the type 'the stove burned me,' 'the chair hurt me,' etc. Certainly, they have been trained to say 'the rose is red,' 'the work is hard,' and the like. Such statements are false-to-fact representations of relationships and have come down to us, sanctioned by

ancient usage. Primitives and human infants, guided only by their 'sense' impressions, made such observations quite naturally. The critical capacities of adults, even among 'primitives', and the scientific knowledge of our civilization reveal that such statements should be altered to read, 'I *react* to my mother's conduct with sickness,' I *interpret* my husband as coercive,' 'I *burned myself* on the stove,' 'I *perceive* the rose as red' (a color-blind person would perceive it as gray), 'it *seems* to me that the work is difficult,' etc. Statements of this type report the relationships between the observer and the observed and do not ascribe to objects or persons the 'properties', 'qualities', and other abstractions produced in the observer's nervous system.

The linguistic structure of a patient's utterances is an invaluable diagnostic aid. They should be recorded verbatim, not only for purpose of records and diagnosis but to show the patient, in the process of treatment, the discrepancy between statement and fact, between map and territory. If we hear utterances which reflect additive relationships of the plus or minus type, such as 'having a disease', 'eliminating defects', etc., we may expect such language to reflect behavior characterized by reactions of acquisitiveness or deprivation. One such patient spent much of his energy and money collecting masculine clothes, cultivating what he considered to be a masculine voice and manner, undergoing expensive but needless injections of sex gland extracts. Another spent most of his time confessing his sins, purging his bowels and finally attempted to castrate himself.

TWO-VALUED ORIENTATIONS

An excessive use of the verb 'to be' in its forms of identification and predication indicates a tendency to objectify or reify symbols, or to confuse orders of abstraction. If we hear terms denoting 'all-ness', such as 'never', 'always', we may be sure to find rigidity, dogmatism and too limited an outlook. Such verbalisms are characteristic of early childhood and the 'second childhood' of senile degeneration; in an adult they are psychopathological and are associated with physiological tension states which may eventually produce structural changes in tissues. Similarly with language the structure of which is two-valued: It reflects the characteristic 'antithetical thinking' of severe neurosis. Such people have reactions of an *either-or* type; they are driven by compulsion and counter-compulsion. They necessarily go to extremes, are absolutistic and categorical, so that for them attitudes of moderation and tolerance do not exist. They are frequently maladjusted sexually through dividing *all* women into 'madonnas or prostitutes', *all* men into 'sons or lovers', etc. They distort life issues by orienting themselves through fictitious categories of the types, 'Caesar or nothing', 'Am I Napoleon or a louse?', 'perfection or disaster', 'mental' or 'physical', 'functional' or 'organic', etc.

PSYCHOSOMATIC REPRESENTATION

Since physiological reactions to strong feelings involve symptoms referable to various parts of the body, language has acquired metaphors reflecting these bodily reactions. We speak of being 'blind with rage', we get a 'pain in the neck', 'cannot swallow or stomach something', or we are 'griped by someone'. We become 'speechless with rage', 'breathless with excitement', and we 'tremble with fear'. These are but a few of such physiological metaphors for semantogenic states. Although originating as verbal

descriptions of bodily reactions, they actually act as maps of how to react and thus contribute to the patterning and standardization of human reactions.

PROJECTION AND IDENTIFICATIONS

In reacting to objects or to people, the mechanism of *projection* is at work. We project, or refer, 'properties', 'qualities' and even feelings that are aroused in our nervous systems to the regions whence they seem to arise, that is to objects or to people. Beyond a certain point, projections become pathological. The patient believes his abstractions are actually *part* of the object or person to whom he is reacting. Identification occurs. It is as if, not knowing that he is color-blind and, therefore, unable to react like others, he is prepared to die, certainly to fight, for his belief that a rose 'is' actually gray. Misinterpreting sensations of numbness and tickling, indigestion or sleeplessness, and a host of other symptoms commonly due to anxiety, patients frequently project their notions of causation onto their notions about their organs or to the external world. They may accuse others of shooting electricity into their bodies, of killing them, of poisoning them, of giving them disturbing 'thoughts', and so forth. When misinterpretations are projected to the external world, they are spoken of as delusions, illusions, or hallucinations according to their nature and the severity of the mis-evaluating process. When projected on their own bodily functions the symptoms of conversion hysteria or hypochondriasis result. It is clear that the structure of language does much to foster the development of pathological projection and tends to produce in most people some variety of delusional evaluation.

Because symbols are frequently formed by selecting some characteristic item to represent a totality of which it is a part, it is natural that primitives, infants, and semantically ill people, may react to words or statements *as if* they were the total situation to which they refer. This is treating the 'map' as the 'territory'. Patients who are anxious are continually doing this. As they talk to themselves about some experience in their past lives or anticipate some future situation, they actually experience physiological reactions which they had or expect to have. One married woman has only to talk about her former marriage to relive the bodily reactions of terror and rage with which she reacted to the threats of her husband; and she has only to talk to herself about possible difficulties lying ahead of her to become 'too exhausted to move.' A young married woman of twenty-four with two children has only to read a popular description of a disease as in a newspaper article, to produce the symptoms described. She can actually produce, by identification, many of the physiological changes such as rapid heart action, intestinal disturbances, to the point that doctors have been misled and instituted expensive and unsuccessful treatments, including a thyroidectomy. As she puts it herself, 'Anything I think of, I have.' Another married woman had a severe depression following the death of her third child in infancy. Seeing another baby, a picture of a baby, or hearing the word 'baby', would elicit reactions of grief which cleared up completely when she was trained by the methods of general semantics to distinguish between symbol and 'object', map and territory.

Confusing symbols with objects leads to many bizarre reactions. There are many

reports of simple folk eating the Latin prescription a doctor has given them instead of exchanging it at the pharmacy for the preparation it described. One man who had for years been a hog-killer in the stockyards had his projecting mechanism so disturbed by chronic alcoholism that he confused symbols with objects to the point of cutting his own throat, believing that he was butchering a hog. The delirious patient reacts in terror to the projected symbolic products of his disordered brain. To many people who evaluate in an 'either-or' fashion about correct or incorrect conduct corresponding symptoms appear on the right or the left ('sinister') sides of their bodies. One young man, son of a Lutheran pastor, who felt guilty about petting, treated his verbal maps so literally that he would put his *right* arm around a girl (which was permissible according to his code) and indulge in unpermissible explorations with his *left* hand. This was because he had been impressed by a biblical text to the effect that one should never let his right hand know what his left hand is doing! A brilliant student in the early twenties had the habit of buying watches and books beyond his allowance. He did this at times when he was harassed by the notion that he lacked sufficient 'time' and sufficient 'knowledge'. Under the tension of such feelings, he collected symbols of 'time' and symbols of 'knowledge'.

Examples of this mechanism of identifying the map with the territory could be produced endlessly. To a certain extent, such reactions are present in most of us. They may lead to quite mild disturbances or to such severe maladjustments that commitment to a hospital for the 'mentally' ill is the only solution. People who evaluate in this way are reversing the natural order of evaluation and they are identifying orders of abstraction. It is as if they followed the mottoes, 'In the beginning was the word. . .,' or 'The word became flesh.'

ABSOLUTISTIC ATTITUDE TOWARD LANGUAGE AND RIGIDITY OF PERSONALITY

Semantogenic disorders may arise upon the assumption that statements of any kind can be complete, that they cover *all* the known and unknown facts in a situation, as if a map could represent 'all' the characteristics in a given territory. People with this type of disordered evaluation are prone to be very dogmatic and absolutistic. They think they know *all* about *everything* and are usually rigid, inflexible, overbearing, dogmatic and perfectionistic to a degree uncomfortable for themselves and particularly for others. Or they may be gloomy and pessimistic because their verbal assumptions lead them to believe that no alleviating facts remain to be discovered. The ordinary language of these people is characterized by an excessive and unlimited use of words like 'always', 'never', 'none', 'absolutely'. Verbalism of this type is more or less characteristic of immature nervous systems. The abstractions and responses (semantic reactions), which such verbalism represents, give rise to dogmatism, pessimism and a consequent attempt to cling to the delusional safety of categorical 'thinking' or to feel blocked and helpless in the face of these finalistic orientations.

A recently re-married divorcee who was experiencing some difficulties in adjusting her temperament to that of her husband said, 'I have always failed in marriage, and I shall never succeed; I had better just give up. I have absolutely no energy left. I hate my mother for what she did to me in childhood. My husband and the doctors

remind me of her because they are always telling me what to do. They are all mothers to me. I guess I distrust everybody, including myself.' Patients of this type construct verbal maps by generalizing from a few experiences. This follows the principle of 'once bitten, twice shy' or what is sometimes called the 'burnt child' complex. Having had a few failures, the patient generalizes his experiences and predicts that he will *always* be a failure. He extrapolates. Such a frame of mind may lead to suicide or to severe and prolonged neurotic illness as in most cases of so-called homosexuality. But people with this type of evaluation may also become strong but dominating and dictatorial leaders. They are apt to break down when crossed or when shown facts which contradict their statements. The majority of such cases come from backgrounds where statements and beliefs of this type were frequently heard or followed. Such backgrounds were usually rigidly authoritarian; various kinds of literature, such as religious writings, were treated as 'the final authority' or 'the last word'.

EVALUATION BY INFERENCE

Many of our reactions are not based upon descriptions or reports of actual occurrences but on reports of reports, statements about statements, inferences and judgments formed from inadequate descriptions, etc. It is said that Seneca taught his students in effect: 'If you see a man who does not regularly wash his hands, do not call him a pig; merely say, this man does not wash his hands.' It is frequently the inferences we form at levels of abstraction remote from the actualities with which we have to deal, that give rise to untoward reactions.

MULTIORDINAL MECHANISMS

The self-reflexiveness of language gives rise to much maladjustment. Most neurotic reactions illustrate these mechanisms. A patient will have some reactions to a shock. He 'talks to himself' about his reactions, concluding that they are undesirable, that they are different from the reactions of other people, dangerous to life, and so forth; he forms inferences that he is a 'coward', a 'mess', a 'pervert', etc. The labels he applies to himself stimulate further reactions of a disciplinary, critical, or hopeless type. He is misled by the identifications and all-ness of his utterances. He then finds himself anxious about being anxious, afraid of being afraid, tense about being tense, sleepless about being sleepless, perverted because he 'is' a pervert, and so on. Many a patient has said, 'I get angry because I get angry, then I become angry at everybody, myself included.'

Patients frequently observe their hostile reactions toward other people and then become anxious because such impulses are unbecoming, reprehensible by the verbal definitions of 'codes'. As one young matron said, 'I must not feel angry at mother because God will punish me, like my father did, for kicking her one time when I was a child.' Not infrequently, such patients are completely unaware of the original impulse of hostility or anger simply because to recognize it would endanger their security if they are over-dependent on the opinions and protection of others: consequently they may only become aware and suffer from the physiological effects of anxiety generated under the influence of their more or less unconscious assumptions or of 'civilized' creeds and precepts which automatically condition their reactions.

Introspectiveness, rumination, and self-absorption are unhealthy products of these self-reflexive or *multiordinal* mechanisms (Korzybski's term). 'Thoughts about thoughts', etc., lead to their objectification (reification) and rapidly build up anxiety-tension states with distressing bodily reactions which only engender further fears. On the other hand, if different orders of abstraction are recognized as maps, not territories, and are not confused or equated, the greatest heights of human insight and capacities to generalize and transmit experience may be reached.

DANGER OF OVER-VERBALISM

Maladjusted persons orient themselves too much by verbalism. They over-value language because, perhaps, in our particular society it is over-valued through being equated with 'superiority of mind', with 'intellect', and related 'higher things of life'. Verbalistic schemes of life may be built up like elaborate maps to the point that in themselves they are fascinating and the 'realities' of which they were but symbolic reflections are neglected. Patients become enamored of their verbal schemes, display them before others, mislead themselves and others. Often they are compulsively driven by them, desperately afraid to forsake them for a reality with which they were never properly taught to deal. If their verbal schemes are Utopian, they will be repeatedly shocked by 'realities' at variance with their expectations. Any defects in map-territory correspondence may produce tension states and mild or severe maladjustments will be the consequence.

PSYCHIATRIC VERBIAGE

Misleading and false-to-fact verbal maps not only reflect and maintain disordered abstracting mechanisms (and consequently maladjustments, illnesses, etc.) of psychiatric patients, but they misrepresent contemporary medical knowledge and tend to maintain obsolete assumptions. Every neuropsychiatrist knows that the elementalistic structural assumptions conveyed by such venerated terms as 'mind', 'body', 'intellect', 'emotion', 'organic', 'functional', and the like are not in accord with clinical and laboratory observations. The indivisibility of organismal processes responsible alike for the altered functioning of organs, such as muscles and glands, and for varieties of symbolism, as gestures or words, is a central observation in psychosomatic medicine. Yet the medical profession as a class and psychiatrists in particular continue, in the main, to use a terminology which does violence to the facts.

Aware of the insufficiencies of the obsolete assumptions implicit in antiquated terminologies, some investigators and writers have made attempts to remedy the threatened breakdown of our systems of representation and communication by the re-definition of old terms or the construction of new ones. Re-definition leads to endless verbalistic patching, to a loss of precision in formulation and eventually to misunderstanding, confusion and decadence. Such is the history of terms like 'mind', 'emotion', 'functional' and many others. The construction of new terms will only be useful if their structure adequately represents the newly discovered empirical data, i.e. if the map is similar in structure to the territory. Too often new terms have been devised which only elaborate the atomistic features of the old (e.g. *id*, *ego*, *super-ego*) thus producing

more fictive 'entities' if, as happens all too often, they are objectified. And the more that psychiatry borrows terms from metaphysics, classical mythology, or literature, the further it separates itself from the scientific foundations of human biology.

REFORMULATIONS

The principles of a new and scientifically up-to-date terminology for psychiatry are formulated by general semantics. A few new terms replace obsolete ones and the extensional devices change the structure of others; a language of static, elementalistic structure becomes one which more adequately reflects the non-elementalistic processes of human adaptation.¹³ The term *abstracting* is applicable at all levels of neural functioning whether physico-chemical or symbolic. *Evaluation* replaces the never resolved dichotomy of 'intellect' and/or 'emotion' with a non-elementalistic term covering both aspects of a unitary process. Both terms, being general, can be given specific or extensional content by referring to particular levels or types of abstracting or evaluating. Both are organism-as-a-whole terms and imply environment. The extensional devices of *indexing*, *dating*, and the free use of the *etcetera* or its equivalents, together with the liberal use of *quotation marks* and *hyphens* when applied to ordinary, static terminology, confer flexibility, differentiation and a dynamic structure to statements. By these structural modifications psychiatric statements may more accurately represent the changing processes under observation and guard against the objectification of elementalistic abstractions; the confusion of facts and verbal fictions. A bridging terminology unites neuropsychiatry with other fields of human biology and contributes to the unification of science.

CLINICAL APPLICATIONS OF GENERAL SEMANTICS

Of the contributions of general semantics to neuropsychiatric theory and method, the most important are its applications in psychotherapy. Since so many well known types of human maladjustments are due to disturbances of neuro-psychic abstracting mechanisms, it follows that psychotherapy should be concerned with the elimination of faulty and the development of correct evaluation. Although most psychotherapists have recognized these mechanisms and aims, as evidenced by such psychiatric clichés as 'changing the patient's outlook', 'bringing about emotional maturity', 'removing the fixations of childhood', 'straightening out the thinking', 'facing reality', and the like, they have used widely differing methods, based upon divergent formulations of their underlying assumptions, to accomplish prevention, amelioration or cure. Korzybski has offered in the formulations of general semantics a generalization of the neuro-psychic mechanisms involved in mis-evaluation and practical methods of prevention and treatment.

These methods do not replace other psychotherapeutic procedures so much as they supplement or sharpen them. For the success of any psychotherapy rests, in the last analysis, upon the communication established between psychiatrist and patient. While many factors influence the relationship between patient and physician—factors

¹³ For details, see Introduction to Second Edition of *Science and Sanity*, and Irving J. Lee's *Language Habits in Human Affairs: An Introduction to General Semantics* (New York: Harper and Bros., 1941).

arising out of the treatment situation, age and sex differences, cultural background, etc.—of greatest importance is the capacity of the psychiatrist to evaluate and formulate verbally the issues involved in a given patient's reactions. Not only must the therapist correctly formulate the patient's own poorly verbalized mis-evaluations of his relationships to himself and others, but he must communicate new orientations, new methods of evaluation. Psychotherapy is predominantly a matter of linguistic formulation so that the psychiatrist must also be a general semanticist. The best ones are intuitively so, perhaps because their own backgrounds of personal and clinical experience have extensionalized them and they have acquired the happy knack of making lucid explanations and of penetrating their patient's defenses. But those therapists who are less gifted or who have been misled by the intensional formulations of systems to which they have adhered, can vastly improve their formulations to patients by utilizing the techniques offered by general semantics. These methods however, in themselves, will be no substitute for the personality of the therapist (which is often more important than the systems he employs), for the deep searching methods of psychoanalysis so essential in certain cases, and for the recognized adjuvants to psychotherapy such as recreational, occupational, nutritional and medical regimens.

DIRECT AND INDIRECT METHODS OF APPLICATION

When general semantics is used as a technique of psychotherapy it may be employed directly or indirectly. Its direct application is made by giving the patient explanations of *time-binding* and the necessity for survival of an assumption of one's personal responsibility toward others, abstracting in different orders and techniques for re-establishment of the correct order of abstracting, the map-territory relationship between verbal symbolization and non-verbal happenings such as feelings or external 'realities', the use of the extensional devices in making verbal formulations, etc. Korzybski's own writings,¹⁴ Johnson's monograph,¹⁵ Hayakawa's¹⁶ and Lee's¹⁷ books should be consulted for details of these methods. It should be pointed out, however, that the crucial technique is a training in the proper order of evaluation brought about principally by use of the extensional devices. *Indexing* and *dating* of all verbal formulations forces a patient to differentiate; differentiation involves delaying of reactions through long circuiting of nervous impulses; differential activation and dynamogenic effects of cortical upon lower centers automatically follow. Similarly the use of the *etc.* or its equivalent reminds the patient of the incompleteness of any verbal abstraction he may make and thus stimulates him to further investigation of facts, to differentiation and the other interconnected cortical functions. Use of *quotes* and *hyphens* enables him to avoid some of the implications of obsolete terminology and to construct non-elementalistic and therefore structurally more correct terms when needed. Language, as a cortical product, is

¹⁴ *Science and Sanity*, *op. cit.* See also list of his other writings distributed by the Institute of General Semantics, Chicago.

¹⁵ Wendell Johnson, *Language and Speech Hygiene: An Application of General Semantics*, General Semantics Monographs No. 1 (Chicago: Institute of General Semantics, 1939).

¹⁶ S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace and Co., 1941).

¹⁷ *Op. cit.*

then used as an instrument to stimulate constructive cortical functions. In addition to these direct methods of explanation and drill in the use of the extensional devices, certain other techniques are used which will be explained subsequently.

The indirect application of general semantics is more suited to cases requiring prolonged psychotherapy and which are too disturbed to comprehend or apply the direct method outlined above. The psychiatrist must use his own judgment as to how, when, and to what extent he may introduce the formulations of general semantics. Rather than employing them as a system, they are best used piecemeal according to the progress of the case. A gentle correction of the patient's over-generalized, dogmatic utterances and phraseology by questioning his use of 'always', 'never', etc., and pointing out factual situations which contradict his statements, may be the starting point. Or the dating and indexing of statements may be introduced by calling the patient's attention to examples of change in situations or in people which have escaped his notice. Thus when the patient speaks about another person such as his mother, he may be asked if he is referring to his mother of twenty years ago or his mother of today, to his relationship to her as a child or his relationship to her as an adult, etc. And when the patient is objectifying his abstractions or projecting them on the outside world as in hallucinations, the psychiatrist could use such phraseology as 'What you call, or label, so and so,' 'What seems to you as—.' By such procedures some consciousness of abstracting can be built up and the objectification of abstractions can be eliminated even in patients who seem inaccessible. As the illness subsides and communication improves, more and more direct explanations may be given but it must always be remembered that with severely neurotic and psychotic patients who have constructed and clung desperately to a web of false-to-fact and misleading abstractions, sweeping these abstractions away too quickly with the somewhat facile explanations of general semantics can do harm. The semantically crippled cannot get along without their crutches before they have learned to walk.

NON-VERBAL TECHNIQUES ARE ESSENTIAL SUPPLEMENTS

Both the direct and indirect methods of applying the formulations of general semantics depend for their success upon other than purely verbal techniques of presentation. True it is that correct verbal formulations may evoke imagery affecting the lower centers; therein lies the skill of the literary artist in poetry or prose. But the supplementation of verbal formulation by the use of demonstrations of diagrams and models reaches the sub-verbal levels of cortical and lower stations more directly and powerfully. In actual practice, as many cortical analyzers should be engaged as possible both by speaking and writing the terms used and also by diagramming and modeling the relationships and mechanisms they designate. Gestures of the hand, objects on the desk, other people, etc., may be pressed into the service of communication by demonstration. All this serves to further emphasize the map-language—territory-fact relationship and to drive home the lesson of structural similarity between formulations and facts. It is not enough just to talk of the brain; an actual brain, a model or a diagram, should be shown. The difference between levels of abstraction should be illustrated with materials as well as by verbal explanation, for

example by the structural differential. And the patient should be trained to use gesture, diagram, model or demonstration for every statement he makes. Such procedures not only engage sub-verbal levels but the very act of carrying them out involves that delaying of reactions which is automatically accompanied by further differentiation, differential activation of lower centers, etc. The patient is pulled down to earth.

These techniques involving non-verbal methods of communication have been designated 'thalamic communication' by Korzybski. Only as metaphor is the term satisfactory, for Korzybski never intended it to indicate a sharp anatomical or physiological localization in the brain. As stated in an earlier section of this paper, verbal abstractions are the highest we have and are formed from more complex abstractions spoken of as imagery. Imagery may be predominantly visual, kinesthetic, auditory, etc., and complex imagery involves syntheses of many modalities of sensory abstractions. Apparently the imagery evoked by verbal and other symbols directly affects the functioning of diencephalic and other stations. Recent studies would suggest that the cell groupings or nuclei in the hypothalamic region function like the keys and stops of an organ which, when played upon in varying combinations, produce different tones. If this analogy be accurate, then those abstractions known as imagery might be considered as the composition to be played and the still higher abstractions known as evaluations or attitudes of various kinds resemble the organist or the musical director who selects the music. For the re-education of most patients we must not only offer new music but show them how to play it.

NEURO-MUSCULAR RELAXATION

Another important adjunct to the verbal method of general semantics and in line with what has been described as 'thalamic communication', is a technique of neuro-muscular relaxation, originated by Korzybski, who called this 'neuro-semantic relaxation'. Any semantic reaction involves varieties of bodily change such as fluctuations in blood pressure, and the tension of visceral or skeletal muscles. The effector structures of the body being predominantly muscular (blood vessels and the digestive tract included) it is not surprising to find increased tension throughout the body, especially in response to semantic states of fear or rage. As we may be unaware of making abstractions producing states of fear or rage, neuro-muscular hypertension may exist for a long time, even from infancy, and only give rise to symptoms when it becomes severe enough to produce pathology. Even before this stage, neuro-muscular hypertension gives rise to volleys of impulses through proprioceptive pathways to sub-cortical centers. Postural reflexes, further tensions, circulatory changes, etc., are automatically aroused and contribute to a vicious circle. The congestion of blood and metabolites in muscular structures, the development of fibrous tissue and degenerative changes may produce a variety of symptoms which, passing the threshold of consciousness, may be interpreted by the patient according to his particular evaluation of such experiences. He may readily misinterpret various localized tensions and their sequelae as 'heart trouble', 'arthritis', 'tumors', etc., thereby increasing his already present state of anxiety and establishing another vicious circle of the type 'anxiety about his anxiety'. Hypochondriasis is thus instituted.

These semantic tension states may be easily diagnosed by gentle feeling with the hand of certain regions of the body, especially those containing defensive groups of muscles. This type of tension is found in the involuntary muscles such as the walls of blood vessels. By a gentle procedure comparable to the reassuring handling of a child, the tensions may be reduced and even eliminated. A description of the principles and techniques employed must be sought elsewhere.¹⁸ Neuro-semantic relaxation is a great help in therapy because patients actually suffer from their hypertenseness and it is almost invariably linked with deep infantile sources of mis-evaluation. The reduction of this tension by a relaxation technique not only relieves the patient of vague discomfort but makes him much more accessible. As the technique is simple and easily taught, the patient assumes the responsibility, beneficial to him, of self-treatment.

Summarizing the applications of the methods of general semantics in psychotherapy, it may be said that direct and indirect methods of extensionalization may be employed according to the type of case, that verbal methods of presentation should be supplemented by non-verbal techniques designed to engage sub-verbal and sub-cortical centers of neural function, that a special technique of neuro-muscular relaxation, which is strictly interconnected with the psychosomatic principles formulated by general semantics, may be employed at the discretion of the therapist.

EVALUATION OF PSYCHOTHERAPEUTIC USE OF GENERAL SEMANTICS

It is difficult to evaluate the results of the application of these methods of general semantics in psychiatric practice. For one thing it is impossible to use any specific procedure of therapy in isolation. Adjuvant procedures such as the use of drugs, or amelioration of the irritating situation contributing to a patient's 'breakdown' may, among other things, becloud the issue. In the hands of one person general semantics may seem to yield better results when applied directly or indirectly than in the hands of another therapist, and no one is treating the same patient under the same conditions. At best, one can only give general impressions of the effectiveness of the extensional methods of general semantics.

As a general statement one can say that general semantics is emphatically not a psychotherapy in itself. It is an adjuvant, an accessory method. It is both an implement and a sharpener of other implements used in psychotherapy; its contributions to theory and practice are great. In providing a general theory of human evaluation that is neurological and may be visualized, general semantics has made a foundation not only for psychotherapy but for the whole field of education. When applied directly, that is when taught as an independent system which the patient is expected to acquire by study and drill, the results, on the whole, are not entirely satisfactory. It is difficult to get patients to concentrate on something which seems so remote from their personal problems, and if they do accept the teachings 'on authority' the responses they acquire often merely cover up neurotic reactions persisting at lower levels. Some patients use general semantics as a sort of escape mechanism, studying enthusiastically

¹⁸ *Science and Sanity* (2nd ed.), pp. xxvii, xxviii; also Wendell Johnson, *op. cit.*, Ch. vii; and forthcoming medical report by the author. [See also 'The Use of General Semantics Techniques in Physiotherapy' by M. W. Niles in this volume. Korzybski is preparing a paper on his neuro-semantic relaxation, its empirical historical background, tentative theory, applications, and results.—*Editor*]

to narcotize their neurotic anxieties. Others use it to supplement their aggressions against others, to achieve a vicarious superiority by puncturing the verbalistic orientations of their competitors, etc. Not a few patients are much disturbed by the new orientations implicit in the formulations of general semantics for it may too rapidly sweep away their creeds, beliefs, and other intensional orientations. One draws the conclusion from such experiences that general semantics is applicable as a direct systematic procedure only to the milder clinical cases. However as a preventive technique in educational practice the value of direct presentation is unquestioned.

Indirect application along with other psychotherapeutic procedures, diluted and timed in its applications to meet the exigencies of the patient, is most encouraging. Speaking generally it materially shortens the length of psychotherapy and makes the patient independent of the therapist at a much earlier stage. It is applicable to a large range of neurotic and psychotic reaction types. The milder character neuroses and in particular the situation neuroses are benefited most of all, and it is of some help in the deep character neuroses and psychoses when they have recovered sufficiently to be accessible. A situation neurosis, such as acute hypochondriasis in a successful business man, may be cleared up in a few days to a few weeks with the help of general semantics, but a deep-seated character neurosis in a seclusive, retiring single woman that had its roots in the helpless insecurity of infancy is not likely to be helped much, certainly in early stages of treatment, by general semantics.

GREATEST USEFULNESS IN GROUP THERAPY, EDUCATION AND MENTAL HYGIENE

One important field of application for general semantics is in the outpatient's clinic of large hospitals and in group therapy. In group situations it may be taught as a system and is very effective if treatment is supplemented by personal interviews of a standard psychotherapeutic type. This may be the broadest field of usefulness of general semantics; namely, group psychotherapy. Although there seems to be no substitute for the individual methods of private interviewing, general semantics can, however, be utilized to treat the features common to most neurotic reactions by group methods, thereby saving time consumed by private interviews. And as pointed out above, its methods may be applied in a private interview by sharpening the formulations of the psychiatrist and supplementing his verbal techniques with those of 'thalamic communication' and 'semantic relaxation'.

The chief application of general semantics lies, in the writer's own opinion, not in psychotherapy but in preventive psychiatry, that is in so-called mental hygiene. Education, of course, constitutes an even broader field. Neuropsychiatric research has revealed the mechanisms of psychopathology. Korzybski has unified the formulations of those mechanisms and has constructed a general theory of evaluation. Since psychopathological reactions have been shown to be the results, in the main, of faulty education, conditioning, etc., general semantics can contribute educational techniques which will prevent such breakdowns at their source.

GENERAL SEMANTICS IN MEDICAL EDUCATION*

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Those of us who are interested in teaching medicine and have some realization of the responsibilities involved, are confronted with complex and often baffling problems. Undoubtedly, advances have been made in teaching methods in recent years and constructive attention continues to be directed toward the improvement of medical education. There are certain fundamental difficulties, however, which have not been recognized very generally. My attempt to point out some of these problems is not meant to be in a highly critical vein; I simply wish to indicate our need for help along these lines. A clear understanding of our difficulties should be made known, and advice and help should be sought from any quarter which may offer remedial suggestions.

My thinking on these problems has been stimulated by a series of lectures by Alfred Korzybski on general semantics, which formulates a new branch of natural science concerned with 'human evaluations and orientations'. It is based on much profound epistemological theory which cannot be entered into within the scope of this paper. In addition to theory, however, general semantics offers a methodology and working mechanisms which I have found extremely helpful in my own 'thinking' and teaching.

In medicine we are trying to understand and manipulate variations from 'normal' which occur in our bodies. The infinite complexity of the human organism in relationship to its environment leaves us little hope of obtaining more than a fragmentary knowledge of such intricate changes. And if this dynamic state of life is difficult to understand, it is even more difficult to teach.

One of the most serious problems in the teaching of medicine arises from the highly technical terminology which engenders much confusion as to 'meanings' and interpretations. Perhaps it is a somewhat more complicated situation than that found in other scientific fields, for medicine has retained so much from its ancient history and has, in addition, borrowed so liberally from the basic sciences and appropriated terms common to the other professions, without having formulated any co-ordinating theory or methodology. The problem is more serious than it might at first appear. Dr. Crookshank recognized this in his supplement to Ogden and Richards' *The Meaning of Meaning*¹ when he said, 'All teachers and professors of medicine are dependent in the communication of their researches to their fellows and of instruction to their pupils upon the use they make of symbols and upon their understanding of the difference between thought and things.'

In addition to inadequate terminology, there are linguistic difficulties inherent in conveying knowledge empirically gained to the student, whose capacity for dealing with unfamiliar, highly inferential, terms is decidedly limited. An example of this is

* This paper, first read at the Second American Congress on General Semantics, August 1941, has since appeared in the *Journal of the Association of American Medical Colleges*, March, 1942.

¹ F. G. Crookshank, 'The Importance of a Theory of Signs and a Critique of Language in the Study of Medicine,' in C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (5th ed.; New York: Harcourt, Brace and Company, 1938), pp. 337-355.

encountered in our efforts to teach the quantitative aspects of disease. It is not so difficult for the teacher to express or the student to interpret the qualitative changes which take place in the diseases we are called on to diagnose or treat. But we find a wide variation in the individual inferences generated by the quantitative aspect of our descriptions. For example, we often refer to the subjective symptom of pain in the abdomen. The *quality* of pain is not difficult for anyone to understand; most people have had pains in the abdomen at some time in their lives. But, as soon as we attempt to measure this subjective symptom, we are confronted with difficulties of interpretation. We resort frequently to comparative terms which we hope will offer some clarification—such as ‘marked pain’ or ‘rather severe pain’. Textbooks are filled with descriptive words like ‘stabbing’, ‘colicky’, ‘knifelike’, ‘boring’, ‘dull’, etc. The use of quantitative terms is equally difficult of understanding in application to objective signs and symptoms. References to ‘cyanosis’, ‘edema’, ‘dyspnea’, are frequently encountered. The student can recognize the qualitative aspect of a bluish discoloration of the skin, a puffy accumulation of fluid in the tissues, a shortness of breath; but the quantitative measurement of these conditions, which, after all, is the indication of the seriousness of the disease process, is exceedingly difficult to convey.

Accurate and complete statistical analyses would seem to offer some hope for solution of this perplexing situation, but as yet biometric studies have not proceeded to the point where we are able to reduce any considerable number of our observations to mathematical formulae. Statistical methods are becoming increasingly helpful, but even when dealing with numbers, we must be sure that they have not been manipulated to prove a cherished theory.

The use of definitions has been the very basis of our understanding of health and disease. An indiscriminate dependence on them has given rise to serious mis-evaluations. Too often medical men have felt that when a disease was given a name or label, then diagnostic problems were taken care of and treatment could accordingly be prescribed. The controversy raging at present around the management of acute cholecystitis illustrates my point. In a general way, acute cholecystitis ‘means’ active disease of the gallbladder. But from the time the individual first starts out, he has a gall bladder; it begins to show minor changes and finally these may culminate in a crisis or climax which is called *acute cholecystitis*. To suggest the safest time for radical treatment of such a changing disease would be rather questionable if one attempted to deal only with a definition. A survey of the literature in medical journals shows that, unfortunately, many authors have been doing just that. I venture to say that pages on pages of discursive writing would never have been written had the authors observed together the cases about which they wrote. In our larger hospitals it is quite evident that the best trained men will differ less in the therapy used than they will in their interpretations of the descriptive terms applied to similar conditions. Yet, in textbooks and lectures, we continue to rely on definitions which are inevitably subject to a wide variation of individual interpretations. Perhaps it is not to be wondered at that medical students come to ‘fondly believe’ (to use the words of Dr. Crookshank) ‘that disease “entities” were discovered by their teachers much as was America by Columbus.’

This problem is an inevitable result of old ways of ‘thinking’. For at least two thousand years our bodies and their environment have been considered as static and

material 'entities'. In the past half century, however, there has been a complete revolution in scientific thinking. In the new approach we are dealing with relationships in a dynamic process world.

This orientation must be imparted to the medical student. He must learn to think of disease as life in an unconventional attitude and he must recognize that it is as dynamic as life itself. Disease is a relationship of physico-chemical changes. These changes are those of life and they represent energy in action. A disease process is analogous to a moving train. When one sees it in motion, it may be just starting or just stopping or travelling at any intermediate rate of speed. The end of the journey may be a predictable station of recovery or the tangled mass of wreckage stopped short of its normal goal. It is a constantly changing, moving picture; you never see it when it is standing still. Descriptive terms covering all these dynamic changes would have to be so extensive that few could live long enough to describe even the simplest of our ailments. It is evident, therefore, that the gaps which must be filled in by the student are many-fold the data which can be supplied by the teacher. The student must have a reliable method of looking for and dealing with new data.

It is my feeling that these unsolved problems have contributed in no small measure to the inadequately prepared students who leave our medical schools. For thirty years I have watched the development of interns and residents in the hospital. I have observed that our old educational methods, based as they are on a static, material orientation and rigid terminology, have resulted very frequently in two types of students, neither of which is adequately equipped. On the one hand, there is the student exemplified by the young surgeon who said to me, 'What bothers me is that I have a rich knowledge of surgery, but when I am on a case I use only about five per cent of my knowledge; I use mostly mechanisms, mostly my hands to think with.' In other words, he is doing those things which can be done routinely without integrating the knowledge he gained through his 'thinking'. Just as seriously handicapped is the student who has very unusual cortical retentive centers. He can remember anything you tell him. He can repeat any number of definitions and so befuddle you that you may think for a time that he is an amazingly brilliant student. But the old Persian proverb describes him well—'He who learns and learns, yet does not what he knows, is like one who plows and plows, yet never sows.' For when it comes to throwing this knowledge into action, such a student is lost.

For such serious problems as I have just posed, I could not presume to offer a 'cure all' solution. Nevertheless, the very recognition of these difficulties should be the first step toward finding a way out. Moreover, there are trends in medical education today which point in a helpful direction and which may very well be developed further.

The increasing emphasis that is being placed on the preclinical study of the basic sciences is highly encouraging, for these subjects deal with the dynamic process world. Claude Bernard has said,

There is in reality only one general physics, one chemistry and only one mechanics, in which all phenomenal manifestations of nature are included, both those of living bodies as well as those of inanimate ones. In a word, all the phenomena which make their appearance in a living being obey the same laws as those outside of it.

The dynamic processes of nature 'in the living being and outside of it' are operative both in health and disease. The symptoms of a disease are manifestations of a disordered

dynamic process. With a sound foundation in the basic sciences, the student is equipped to understand the disordered processes and thus can evaluate symptoms more properly. More accurate, direct observation is relied on, rather than definitions, labels, terms. In other words, an inductive approach is fostered. Thus a certain measure of predictability in disease may be gained; the lack of mathematical exactness is predicated on the fact that in a dynamic process new factors may greatly disturb the course equation at any time.

As an aid in acquiring the inductive approach, general semantics offers certain devices, taken directly from mathematical method. For example, the absolute individuality of each patient and each disease process is indicated thus: a certain disease process in Smith_1 may be quite different in Smith_2 . The disease process, which may be termed 'duodenal ulcer', may be indexed in a similar way. In each patient, a duodenal ulcer will differ somewhat, so that ulcer_1 is not the same as ulcer_2 . The labels *Smith* and *ulcer* indicate the general similarities and the indexes denote the undeniable differences in each individual and each disease process. The importance of environmental factors may be introduced thus: If Smith_1 is in the country, we may subindex him as Smith_{1_1} and a certain disease process may affect him quite differently than as Smith_2 if he were in the city. The time factor, which must always be taken into consideration, is also indexed with a date. A simple, and, perhaps, obvious example would state that Smith_1^{1921} is not at all the same individual as Smith_1^{1921} and a disease he may have had in 1921 will be quite different in 1941, although it may be called by the same name at both times. Thus, while certain general notions about each disease process are kept in mind, identifications, which disregard the individual differences, may be eliminated.

I have referred previously to the fact that in the enumeration of symptoms of a dynamic disease process, it is impossible to say 'all' about it. It would not be practical to do so, if it were possible. Furthermore, there is much we do not know, and new factors may enter the picture at any time. The symbol 'etc.', which is analogous to the use of 'n' in mathematical notation, is a valuable one in this connection. It indicates the infinite possibilities which may be encountered in each situation the student faces. Its habitual use in discussion or 'thinking' about a disease should obviate the error of making absolutistic judgments and thus destroying one's predictability.

Within the scope of this paper, I can do no more than hint at the possibilities of these mechanisms. Actually, they may have a very wide application and can contribute a great deal in the way of flexibility and accuracy to the medical vocabulary. Obviously, these devices will not often be employed verbally. As an aid in training a student to 'think' properly about problems of disease, however, they can be of great value. Their use should help to keep him flexible, alert to new developments and discriminating in his approach toward the problems he faces.

Perhaps, the most important function of these devices is in automatically causing the student to stop and 'think'. In this delay, be it ever so brief, there is time for him to integrate his 'thinking' or knowledge centers with his action centers. This is the ideal of education. Huxley said it very neatly when he remarked, 'The great end of life is not knowledge, but action.'

AN EXPANDED FORMULATION OF ENVIRONMENT
SOME NEGLECTED FACTORS IN THE PERSONALITY-CULTURAL
COMPLEX: 'GENIUS' AND 'FATIGUE'

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Hippocrates, the Father of Medicine, the first anthropologist and meteorologist, and I dare say the first objective biologist, briefly discussed semantics in the following: 'The art of writing is of this sort: the putting together of figures, symbols of human voice, a power to recall past events, to set forth what must be done. Through seven figures [the vowels] come knowledge.' (Regimen, I)

Two primary objectives are immediately stressed: (1) accumulation of knowledge; (2) future direction. And both related to time, past and future—and if so related to time, obviously subject to change, i.e. to evolution.

Clearly underlying Korzybski's approach to semantics is the recognition that the symbolism of the written or spoken word undergoes change. But this, in fact, is no novelty, for it is true of everything in the organic as well as in the inorganic world.

In so far as our culture has largely developed on a Greek foundation, the while the civilization of today has largely developed on the foundation of modern mechanics (physics and technology), an inherent difficulty is to be anticipated when we seek to use word symbols interchangeably to express the 'thoughts' and objectives of our culture and the 'thoughts' and objectives of our modern civilization. In the scientific and technical field in which I am most familiar, namely, medicine, the modern world is far removed from the ancient, so far that for all practical purposes there is no point of contact, even though in practice we constantly make use of Greek or Latin terms which, in turn, convey no 'meaning' that could be useful to the modern user of these word symbols.

When, for example, I say 'thyroid' to my students, the word itself conveys no picture until the student has himself dissected out the gland, or has seen a picture or read a detailed description. To the Greek, the word conveyed a picture of a characteristic shield which resembled the thyroid gland.¹

In the field of medicine there is no great harm done by this awkward and rather anomalous situation. Medicine today is a relatively new science, and particularly a development of our modern civilization, indeed, is one of the foundation stones that has made mass-man possible and everything that goes with this epoch—good or bad, depending on our individual point of view.

What I would like to point out in this brief analysis is the fact that the ancient Greek physician (and those of the earlier period were naturalist-philosophers) fre-

* Dr. Petersen is the author of *The Patient and the Weather* (Ann Arbor: Edwards Brothers, 1934-38).—*Editor*.

¹ Edmund Andrews, 'Medical Terminology,' *Annals of Medical History*, X (1928), 180-198.

quently used words in the symbolic [metaphoric] rather than in the literal sense, and when we once recognize and make use of this symbolism then we find that their 'science' was as 'rational' as ours of today.

Take the symbolic terms *fire* and *water* for example. When the Hippocratic physician used the term *fire* he meant primarily what we do when we use the term *metabolism*. Fire was degradation of more complex bodies, whereby energy in the form of heat was made available. We use the term *catabolism*. Fire signified energy, breakdown; was therefore a process going on continuously, for nothing ever stayed in the same condition. The Greek recognized, too, the conservation of energy: 'so of all things nothing perishes and nothing comes into being that did not exist before.' Energy might be liberated, but no energy was ever destroyed, only the form changed. The law of conservation of energy is not a modern discovery. But as fire was catabolism, 'water' was the symbol used for *anabolism*, that is, for the opposite—the process of building up and storing energy. When 'fire' and 'water' were in a state of perfect equilibrium then the organism was healthy. Today we would say that under normal conditions anabolism must balance catabolism.

The Greek physician said that the male element was 'fire' and the female 'cold' or 'moist'. Again this curious symbolism was correct. Careful measurements make evident that the males of practically all animal species have a higher metabolic rate by approximately ten percent than the female. The male needs relatively that much more energy to keep going. Females are fundamentally more anabolic and the term *colder* is therefore soundly based on biological reason.

We turn to two further physical terms, *wetness* and *dryness*. 'Madness comes from its [the brain's] moistness.' When the condition of the brain tissues is such that there is greater moisture content, the individual is likely to be disturbed, in other words, 'mad'. Today we would use the terms *hydration* and *dehydration*, but in so doing we would 'think' in static rather than in dynamic terms. The Greek biological thought was throughout a dynamic one. The terms conveyed the sense of a constant change, of 'becoming' rather than of 'being'. The physician of today is prone to 'think' anatomically rather than physiologically because our modern medicine evolved in the laboratory of the anatomist while Greek medicine evolved at the bedside.

There is no more illuminating passage than the one which I shall quote to illustrate the Greek interest in semantics and the recognition that different word symbols might represent the same thing, or conversely, that the same words might convey something wholly different. Hippocrates said,

Whenever I speak of becoming or perishing I am merely using popular expressions, what I really mean is 'mingling' or 'separating'. The facts are these. 'Becoming' and 'perishing' are the same thing; 'moisture' and 'separation' are the same thing; 'increase' and 'diminution' are the same thing; 'becoming and mixture' are the same thing; 'perishing', 'diminution', and 'separation' are the same thing; and so is the relation of the individual to all things, and that of all things to the individual. Yet nothing of all things is the same. For in regard to these things, *custom is opposed to nature*.

It is this last sentence which conveys so closely much that we find in Korzybski's point of view. '*Custom is opposed to nature*'

While it might seem quite abstract, it is not, for we physicians must of necessity be rather practical and must often compromise. We can never be wholly 'rational' nor is it likely that humans ever will be, particularly in our language-symbolism.

The Greek philosopher-physician was at least practical if not always 'rational' in his use of word symbols. So, for instance, in regard to religion. Though adhering to no 'creed' in our sense, the symbol *God* was used frequently, but in a very broad sense. Examine, for instance, Hippocrates' discussion on epilepsy:

This disease styled Sacred comes from the same causes as others, from the things that come to and go from the body, from cold, sun, and from the changing restlessness of winds. These things are divine. So that there is no need to put the disease in a special class and to consider it more divine than the other; they are all divine and all human.

But Hippocrates, as a disciple of Asclepius, was practical enough to recommend the symbolic cleansing with 'holy water' when entering the temple compound, the while suggesting that: 'Prayer indeed is good, but while calling on the Gods a man should himself lend a hand.'

Consider for a moment the symbolism involved in the word *God*. What an appalling array of interpretations it arouses in men. What senseless destruction of life and property; what futile waste of human energy has been entailed in this little field of semantics! Even today we can select anything from an interesting interpretation as that of Strömberg as 'immaterial wave motions able to arrange material in a spatial order'² to some crude anthropomorphic notion of self-personification with special attributes. For some, there is direct reference to the sun (after all, a rather logical approach seeing that all organic life is derived from the sun) for others, such as Heraclitus, 'God' is everything—is the unity of the universe. 'God is day and night, winter and summer, war and peace, surfeit and hunger.'

If the Greek philosopher made use of such wide latitude in accepting the word-symbol *God*, accepted change in every sphere of organic expression—thought in terms of 'becoming' rather than 'being'—the rationale of Korzybski's approach must be evident. For men use symbols to signify different things, that have different 'meanings' to different men, at different times.

It is a pity that men must perish unnecessarily because of such confusion, but we can take refuge, again with Heraclitus, that 'to God all things are fair and good and just; but some have supposed that some things are unjust, other things just.'

II

This aberrant introduction along a Greek pathway leads to a very brief examination of the subject indicated in the title of this paper, namely the intricate relationship of 'genius' and 'fatigue'.

Consider leadership and genius as an attribute of the mass, presumably the objective expression of highest 'mental' and 'physical' qualities which the group is capable of producing. As such, we rather assume that we must be dealing with 'stimulation', i.e. an avenue of activity higher than the norm—certainly a dynamic notion and therefore reflecting changing qualities in the organic group.

² Gustaf Strömberg, *The Soul of the Universe* (Philadelphia: David McKay Co., 1940).

Then consider this ever changing mass in its relation to the environment in which it exists, environment being wind and weather; heat and cold; season and climate; land and water; food and occupation; the impact of the group on the individual and of the neighboring group on the component group; custom and habit and all the thousand-fold manifestations of energy impacts on the individual and on the mass.

For the purpose of this study we shall limit our consideration of the environment only to the so-called climatic cycle—a periodicity in greater or lesser stress and strain on the individual and on the mass.

That long range climatic periodicity exists has been well established and we need not enter into a discussion here. Short cycles of about eleven and a half years, double cycles of approximately twenty-three years, and cycles of thirty-five years and various multiples can be observed. The shifts are reflected in either periods of greater cold or heat, of greater wetness or dryness, of greater or lesser storminess, and all these terrestrial phenomena to which the human group is subjected are, in turn, related to solar phenomena (sun spot periodicity).

With such changes in the immediate environment of the individual and the mass, periods of stress may be reflected in either stimulation of individuals, or may result in fatigue of a greater number of individuals in the mass, and these effects may be determined by change in disease manifestations, in psychic phenomena, or in changes in social structure, evident as revolutions, wars, etc.

It is an old observation that genius and leadership occur in cycles. DuBos, Herder, and Koller in this country, among others, have discussed the phenomenon.³ Were this periodic appearance of leadership and genius based wholly on underlying genetic qualities it would be difficult to explain, because presumably both the underlying 'physical' as well as 'mental' attributes of leadership or genius would be transmitted more or less continuously in the group. If, however, an environmental factor is involved, either in the greater production of genius or in the greater destruction of genius (either would account for periodicity in the phenomenon) then it might seem warranted to examine whether there is some relation to long range climatic periodicity.

To make the problem simple I shall first merely examine a selection of geniuses and leaders made by Havelock Ellis in his 'British Genius' and shall group the birth years as well as the death years of approximately one thousand individuals selected by him. (FIGURE 1).

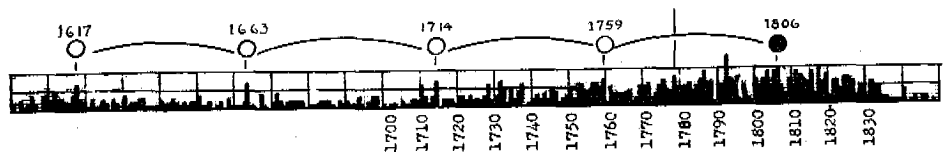


FIGURE 1.—Birth years of 'British Genius', 1600-1850. Selected by Havelock Ellis.* Note trend to cycle formation with four cycles approximately forty-seven years in length.

³ Jean Baptiste DuBos, *Reflections Critiques sur la peinture et sur la poésie* (Paris, 1719); *Herders Sämtliche Werke*, Hrsg. von B. Suphan (Berlin: Weidmannsche Buchhandlung, 1877-1913); A. H. Koller, 'Herder's Conception of Milieu I and II,' *Journal of English and German Philology*, XXIII (1924), 217, 340; *The Abbé DuBos* (Champaign, Illinois: The Gerrard Press, 1937).

* Havelock Ellis, *A Study of British Genius* (New York: Houghton Mifflin Co., 1926).

From the curve of the birth years we will observe that in certain years a larger number of the genius-leader group have been born. There appear to be four cycles since 1617—these are approximately forty-seven years apart (i.e. approximately four sun spot cycles each [$4 \times 11.5 = 46$]).

When we take a small group such as that selected by Cox in her study of 'Genetic Factors in Genius', we will again note that certain years have been remarkable for the production of many outstanding individuals—in other years none have been conceived. (FIGURE 2)



FIGURE 2.—The conception years of a group of outstanding individuals from Cox,* 1600-1850. Note periodicity.

The early years of the nineteenth century apparently produced a maximum, with the black dot indicated on the graph representing the year (1806) in which John Stuart Mill was conceived; Mill is rated by Cox as of the highest intellectual ability.

But the production of genius is not only periodic and related to climatic cycles—the production is distinctly seasonal—we produce more outstanding individuals in the first half of the year. The first half of the year is also that time when the environmental variability is greatest and the physical condition of the mass is at a low, for during this time we have our highest death rates.

If we take the months of conception of the Cox group of geniuses we note the highest conception in April (in the northern hemisphere a period of greatest strain and stress), at the same time that these same individuals of the group die. (FIGURE 3)

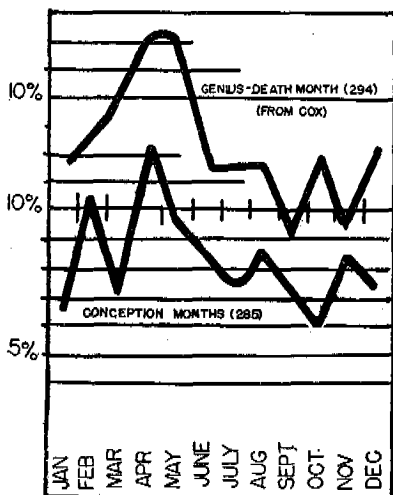
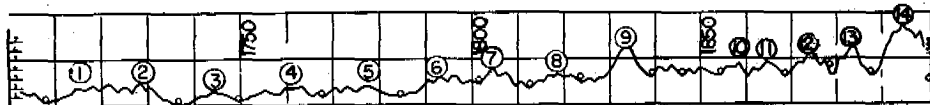


FIGURE 3.—Conception months of Cox group of genius together with death months of the same group. Note concordance of periods of conception with period of death.

* Catherine M. Cox, *Early Mental Traits of Three Hundred Geniuses* (California: Stanford University Press, 1926).

Organic stimulation, as so evident in the production of genius, is at a time of organic fatigue as evident in the death of the same groups!

When we turn to the death curve of the Ellis group a definite wave motion is to be observed, with a crest in the early 1830's. This periodicity is in turn related to sun spot periodicity. (FIGURE 4)



SMOOTHED CURVE OF THE DEATHS OF BRITISH GENIUS GROUP (HAVELOCK ELLIS)
1700 - 1900.

CRESTS INDICATED BY CIRCLED NUMBERS - THE TROUGHS ROUGHLY BY SMALL CIRCLES.
NOTE THE SPACING OF THE CRESTS AND THE UNUSUAL CREST OF THE DEATH WAVE
AT 9.

FIGURE 4.—The death curve of Havelock Ellis group of 'British Genius'. The curve represents five year moving average. Crests of waves indicated by circled numbers.

The explanation of both the seasonal curve of conception (i.e. the production of genius-leader types) as well as the periodicity of the death (seasonal as well as related to climatic cycles) of the same individuals of the group is to be found in the fact that the genius-leader is not a 'normal' individual. This type invariably deviates from the norm either 'physically' or 'mentally' (genius is akin to insanity!). Individuals of the type are produced under unusual environmental conditions (season as well as related to climatic cycles that are apparently associated with greater environmental strain) and they are more than usually susceptible to the environment, a fact that becomes evident in the deaths of the type.

It must be evident that in the discussion of organic (and social) problems the dynamic orientation that underlies the Greek approach to the integration of the human and the environment is one that should ever be kept 'in mind' whether our interest lies specifically in the field of semantics or in biology or in physics. Our orientations must be fluid and in some way or other our means of expression, our symbolism, must find a way to impart the notion of that dynamic and ever changing state of the universe and the ever changing organic reaction to that unstable state.

SOME FUNDAMENTAL ERRORS OF MEDICAL SCIENCE: A CASE STUDY OF OVERGENERALIZATION

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Many of you in my audience have at some time or other gone through a course of muscle and nerve physiology, and thereby made an examination of that fundamental characteristic of living structures which is called *excitability*. What this characteristic is believed to be is well expressed in a recent definition by Frédéricq¹ who defines it as that 'property' which a living tissue possesses of answering by a change in shape, state, or position to a modification occurring in the surrounding medium. This is a definition wide enough to cover the excitation of muscle and nerve by electric currents, the stimulation of a beating heart by drugs, and our own reactions through our 'sense' organs to our environment. So it can be inferred that all these differing reactions are directly mediated through the common possession of excitability by the various organs or tissues concerned. That was the inference drawn long ago, and it may be accepted as having become part and parcel of the automatic 'thinking' of all who have so far attempted to deal with questions of the behavior of living structures.

The importance of knowing what we are talking about when we use the term *excitability*, cannot be overstressed, for we cannot consider how any organ or tissue works, or how they respond to disease processes or drugs, or how we react through our 'sense' organs to our environment without bringing formulations concerning excitability into our discussions. Such formulations, indeed, lie at the root of all our arguments, and amply justify the vast amount of laboratory work which has been done on this subject.

In our College,² however, instead of investigating excitability by the traditional method of applying electric currents to the members of the muscle-nerve preparation, we stimulated beating hearts by drugs. Such a departure from tradition was justifiable in itself because one can grade the strength of the stimulus, in the form of drug concentration, as readily as one can grade the strength of an electric current, and one can measure the heart's response, as its beat or contraction, just as surely as one can measure the contraction of a skeletal muscle. This departure was further completely justified by the results because these stimulations by drugs always gave results essentially different from those obtained by using electric currents. For example, as you all know, the heart's response to an electric current, or to its own conducted disturbance, is of 'all or nothing' character. Individual nerve and muscle fibers also give 'all or nothing' responses when excited by electric currents. But these cardiac responses to drug were graded to the strength of the stimulus. The grading was far from direct, but nevertheless it was here. In addition to this grading, there were varying thresholds, aftereffects, varying latent periods, and so on.³

¹ See *Physiological Reviews*, VIII (1928), 501.

² King George's Medical College, Lucknow, India.

³ W. BurrIDGE, *Arch. Internat. de Pharmac. et de Therap.*, LXII (1939), 399.

Since these stimulations of beating hearts by drugs always give results essentially different from those obtained when quiescent or active cardiac muscle is excited by electric currents and, since drugs and electric currents are both changes of environment, then obviously the beating heart has two different capacities for responding to environmental changes. Obviously also, if one of these capacities be called its *excitability*, the other capacity ought to have a different name because it is a different capacity. Mindful of these facts I introduced the new term *responsiveness*, to denote one of these characteristics. When next it came to deciding which of these capacities should be called responsiveness and which should be called excitability, I took the view that the term *excitability* had a vested interest in the capacity of living tissues to respond to electric currents because it was the capacity round which all exact laboratory investigations had hitherto been made.⁴ The newly discovered capacity I called *responsiveness*, and I would define it as the capacity of a rhythmically active structure to have its proper activity regularly modified by a change in the surrounding medium.

If, at this stage, we hark back to the definition of excitability given above, we can now appreciate that it unsuspectingly embraces these two entirely different capacities of living tissues to respond to changes of their environment. Both capacities are possessed by a beating heart whereas only one, excitability, is possessed by such quiescent structures as are the members of the muscle-nerve preparation. Consequently, so long as anyone followed the tradition of investigating excitability through applying electric currents to the muscle-nerve preparation, he was not only destined never to find, but also destined never to suspect that one of his fundamental definitions actually embraced two essentially differing characteristics of living tissues.

It is therefore next to be appreciated that medical science here has been bemused by an unsuspected overgeneralization in one of its fundamental definitions. For the future avoidance of the confusion which existed in the past, excitability requires redefining in much less general terms than have hitherto been customary. Accordingly, I would restrictively define excitability as the capacity of a living structure to have a single outburst of activity initiated in it by an environmental change, and add the note that a repetition of the change may evoke a repetition of the outburst.⁵

The motor car conveniently clarifies the distinctions between responsiveness and excitability. A motor car possesses, in the capacity of the mixtures in its cylinders to explode under the action of electric sparks, a capacity comparable with that investigated as excitability in muscle and nerve. It also possesses responsiveness because it has a capacity to have its activity varied by feeding different mixtures to those cylinders through the carburetor. Motor cars also have further resemblances to living tissues inasmuch as they too obey the new law of natural stimulation discovered here in Lucknow through observing the stimulation of *beating hearts*.⁶

This new law, as every natural law should, just expresses the facts which it embraces. It states that 'in living structures their natural stimulation according to its strength causes a corresponding development of energy which first remains in being

⁴ W. Burridge, *Excitability, A Cardiac Study* (London: Oxford University Press, 1932).

⁵ W. Burridge, *Arch. Internat. de Pharmac. et de Therap.*, LIX (1938), 449.

⁶ *Ibid.*

and then dissipates after the stimulant has ceased to act.⁷ Motor cars also obey this law because in them their natural or normal stimulation, pressure on the accelerator pedal, causes a corresponding development of energy, which first remains in being, etc.

This new law is entirely at variance with previous notions of natural stimulation inasmuch as it takes this stimulation to be a process equivalent to the application of pressure to the accelerator pedal of a motor car. In contrast with this, tradition leads us to believe that natural stimulants are agents which spark the gases in the cylinders! But, in spite of its great variance from tradition, the new law so embraces the actual facts that many hitherto insoluble problems of natural stimulation acquire the entirely altered character of seemingly self-evident truths. For example, everyone knows that the cinema depends on the capacity of the effects of a natural stimulant; first, to remain in being and then, to dissipate or fade away after the stimulant has ceased to act. This, of course, is just what the law above states. The fundamental theory hitherto applied to these phenomena, however, carried with it the consequence that aftereffects should not be. But, as they actually did exist, the next step was to impute to a retinal end-organ some peculiar mode of behavior to explain how it is that such aftereffects as those on which the cinema depends really could be.

To understand what was thus done in the past, and what is still being done, we may imagine motor engineers and cycle-makers starting out with a fundamental theory of the activation of their machines which carried with it the consequence that they would stop dead either when pressure were taken off the accelerator pedal, or when free-wheeling were started. In practice, however, these machines never thus stop dead. Consequently, the next step must be either to give up the fundamental hypothesis which requires them to stop dead, or to frame an adjustive hypothesis to rationalize the position. The fundamental hypothesis, however, cannot be given up if it be firmly believed in, or if no alternative can be visualized, and such was the case in medicine. No suspicion could arise to the effect that two fundamental characteristics of living tissues were covered by a single definition so long as scientists stuck to a traditional and standardized method of investigating excitability. As a result, all could firmly believe in a false fundamental hypothesis, and none could visualize any alternative. As a further result, much that has so far passed as sound science is in effect special pleading which attempts to explain, as it were, why, in the light of a fundamental hypothesis which required them to stop dead, motor cars do not actually stop dead when pressure is taken off the accelerator pedal. We have even had the 'medical cyclists' advancing explanations of free-wheeling quite different from those of the 'motorists'.

The reader of this who knows how to drive a car can obtain much insight into these phenomena of living structures by translating motor jargon into the phraseology of medical science. He will then appreciate that to 'step on the juice' implies that the machine is being strongly stimulated. He will be quite prepared next to find that the responses or speeds of his machine are adjusted to the strengths of these stimulations; also that the responses or speeds of his machine are not directly proportional to these strengths. And, in view of the fact that the stimulated car develops energy or momentum, it is nothing of a puzzle to him that the machine does not stop dead when the foot is taken off the accelerator pedal. He will further appreciate that,

⁷ *Ibid.*

just as he makes a sharp distinction between the process of sparking the gases and that of pressing down the accelerator pedal in a motor car, so also should he make a sharp distinction between the processes of excitation and stimulation in living structure. Excitation should only be used of a process which initiates activity; stimulation should only be used of a process which causes an already active organ to develop greater activity. Thus, a wave of excitation passes over the heart during each beat, but stimulation provides more potential energy for the same wave of excitation to render dynamic in the beat. Any man, therefore, who speaks of electric currents as stimulants is really one who is muddled and bemused by an error of *overgeneralization* in one of his fundamental definitions. Yet so far the rule has been that such muddling should be done, for in these matters all medical men have been the victims of the greatest of ignorance because they believed that they knew when they knew not. And that brings us to a shattering realization. The most learned and the cleverest of men, when they have discussed or even now discuss how living structures react to environmental change, could and can but perform the process popularly known as 'talking through one's hat', so long as there are confused together these two distinct capacities of living tissues.

My final use of the motor car will be to illustrate the essential nature of this misunderstanding. When considering the reactions of living tissues to their environment the scientist has been in the position where a motorist would be if the latter not only firmly believed that his accelerator pedal was directly connected with the sparking mechanism, but also had no inkling of the existence of a carburetor. A motorist possessing that belief could but infer that the variations of his machine's activities, which follow on his variations of pedal pressure, are consequent on variations produced in the sparks. He is thus automatically driven to consider next what those variations may be. A wide field of speculation is thereby opened up if the sparks cannot be seen, and such was the case in connection with living structures. A theory that pressure on the accelerator pedal makes the sparks long and thin is thereby made as 'good' as the one which states that they are made short and fat, or the other which makes them just wriggly.

Speculation on such lines can but eventually produce a difficult branch of science wherein the student can only fruitlessly endeavor to make choice between the various possible happenings to the sparks. The student would be, in fact, in exactly the same position as would be an astronomer who firmly believed that the sun moved around the earth. Any such imaginary astronomer could never come to a valid decision between the theory that the sun moved of its own proper motion and the competing theories that it was pushed from behind and pulled from the front, respectively.

In medicine at the present time we have much controversy of this character and the controversy ultimately depends on a belief that in living structures the accelerator pedal is directly connected with the sparking mechanism. Unfortunately for progress, however, the man, who has for years carefully devised experiments designed to demonstrate the virtues of wriggly sparks and has taught for years what these virtues are, is unlikely to take kindly to the fact that the accelerator pedal is actually connected with a totally unsuspected carburetor. It is all very well for scientific men to tell the unscientific how scientific principles drive scientists to verify the facts, however unpleasant. One should rather appreciate that all scientists are human enough not to wish

to verify unpleasant facts. One cannot therefore expect that any man, who has taught learnedly for years that the accelerator pedal is directly connected with the sparking mechanism, is likely to attempt to verify the existence of the carburetor. Rather would he teach what he has been accustomed for years to teach and wait for somebody else to do the verifying. And the longer that verification can be put off, the better will he be pleased. Accordingly, it is not to be anticipated that any learned society will just yet take steps to appoint a committee of experts to examine if the facts really are so.

Before concluding, however, I would put in a plea on behalf of the hard-worked medical student. Too much of his time is spent in committing to memory a number of differing and competing theories gathered round some one group of facts. There are, for example, hundreds of theories that attempt to explain how it is that the eye at night is much more sensitive to light than it is during the day. A motorist's headlights, for example, may be blinding at night and yet pass almost unnoticed during the day. The very number of theories that attempt to explain these facts should actually be accepted as the renitent testimony of the existence of some common false belief. But so long as everyone, including editorial critics also, as firmly hold to the same false belief as do the producers of the theories, none is likely to suspect what is really wrong. Next, just as there are many theories to be learnt concerning what is called dark-adaptation of the eye, so there are many theories concerning color vision. Moreover, the general position has been such that if it were suggested to the propounder of a theory of dark adaptation that his explanation of this phenomenon should automatically lead to an explanation of the capacity of red and green to decolorize one another, the suggestion could well be incontinently dismissed as hopeless madness. Yet, if there be any sort of unity behind visual phenomena the achievement should not be impossible. Actually, it is possible but the first preliminary to the achievement is to learn the laws that beating hearts obey when they are stimulated by such a natural stimulant as adrenaline rather than to pin one's faith solely to the events which follow on electrical excitation. When one has done that, the seeming madness to one generation becomes the ordinary for their successors.

Summary: The ordinary definitions of excitability unsuspectingly cover through overgeneralization two essentially differing characteristics of active living tissues. The one characteristic is comparable with the possession by motor cars of mixtures capable of exploding in their cylinders, the other characteristic is a capacity to have activity modified through feeding different mixtures to the cylinders through the carburetor. The former characteristic is deemed definable as excitability proper, the latter is termed responsiveness.

The traditional methods of investigating excitability prevented responsiveness being discovered. As a result some of the fundamental formulations of medical science are found comparable with beliefs that the accelerator pedal of a motor car is directly connected with the sparking mechanism, and that pressure on this pedal alters activity through altering the spark.*

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SEMANTIC DEMENTIA AND SEMI-SUICIDE: A MASK OF SANITY*

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Disorders of the human organism are manifested at various levels of integration. Similarly the causes of our disorders are customarily assumed, with differing degrees of assurance, to lie in damage or pathologic change in certain discernible parts of the organism or at certain levels at which it functions.

In the familiar picture of paresis we find damage that is definitely 'organic'. The brain often shows obvious changes visible to the naked eye. Under the microscope widespread destruction of neurones in the cerebral cortex is prominent.¹ In paresis, such prominent symptoms as poor judgment, faulty reasoning, and 'emotional' disorder can be reasonably well accounted for as the result of this neurologic damage.² Other disorders at a simpler reflex level, such as failure of the pupils to react to light or augmented tendon reflexes, can also be understood in terms of the neuropathology. Certain manifestations at a psychobiologic level, particularly euphoria and grandiose delusions, are considered by some observers³ as compensatory, as arising from the reaction of the total organism to the damage and curtailment of function.

In schizophrenia the typical manifestations are confined to the level of 'personality' functioning. Silliness, delusions, hallucinations, peculiar postures and grimaces, scattering of 'thought', inconsistency and poverty in 'emotional' expression, are often striking. Little or no disorder is noted at simpler reflex levels. Nor can the clinical findings be ascribed with assurance to localized damage in the nervous system. Although observers in the past have reported discernible pathologic changes found in the brain, it is, to say the least, questionable if any such changes can be considered today as established or convincing.⁴ Even if one accepts as established any of the more recent reports of this sort⁵ it is difficult to say if they are 'cause' or 'result' of the disorder; and it is more difficult indeed to show *how* they are causal.

Though, unlike paresis, schizophrenia cannot be satisfactorily interpreted today

* This paper, first read at the Second American Congress on General Semantics, has since appeared in *The Psychiatric Quarterly*, XVI (July, 1942), 521-529.

¹ J. Henry Biggart, *Pathology of the Nervous System* (Baltimore: William Wood and Co., 1936).

² Arthur P. Noyes, *Modern Clinical Psychiatry* (Philadelphia: W. B. Saunders Co., 1935).

³ S. Hollos and S. Ferenczi, *Psychoanalysis and the Psychic Disorder of General Paresis* (New York: Nervous and Mental Disease Publishing Co.).

⁴ It is perhaps worth noting here that after all the findings reported and disproved or reported and questioned, Biggart in his recent textbook on neuropathology, *op. cit.*, does not mention schizophrenia. For reports on the findings, see Jacob H. Conn, 'An Examination of the Clinico-Pathological Evidence Offered for the Concept of Dementia Praecox as a Specific Disease Entity,' *American Journal of Psychiatry*, XXII (March, 1934), 1039-1082.

⁵ Arthur R. Elvidge and George E. Reed, 'Biopsy Studies of Cerebral Pathologic Changes in Schizophrenia and Manic-Depressive Psychosis,' *Archives of Neurology and Psychiatry*, XL (August, 1938), 303-306.

in terms of established neurologic damage, its manifestations plainly constitute a psychobiologic disorder readily demonstrable at the level of 'logic' and 'judgment' or from the aspect of 'emotional' reactions, attitudes, queerness of manner, etc.

If we next consider paranoia, paranoia in the strict sense, we find a disorder less simply and quickly demonstrable. In terms of 'logic' or 'reasoning' ability the examiner is often hard put to it to point out absurdity or gross error. Indeed the paranoiac not infrequently surpasses his critics and his judges as the argument progresses. If we study the paranoiac carefully, however, we find that in 'judgment' if not in 'logic' we have serious disorder.⁶

The paranoiac is usually neat and alert. He lacks the obvious silliness, the mannerisms and strange postures and the gross 'emotional' inconsistency so prominent in the hebephrenic schizophrenic. It is more difficult to demonstrate his psychosis; and much more difficult to say where his deficiency or his disorder lies. If we use a *split terminology* we must grant that he 'thinks' very clearly, if not, as often happens, brilliantly. His 'emotional' reactions are usually consistent with his beliefs and his actions are not inappropriate. In order to describe paranoia it is much more useful to speak in terms of *evaluation* which does not imply an artificial splitting of personality function into 'faculties' that exist only by definition. If we attempt to deal with the paranoiac in the artificial medium of split-terms, taking them seriously, we are inadequate, in a sense delusional ourselves. And the paranoiac, who is very clever himself at merely verbal levels of abstraction, may best us with his own ingenious manipulations of *false knowledge*.⁷

Though the paranoiac's disguise of 'sanity' is good, he can usually be worked back to his fundamental false premises which finally emerge as delusions demonstrable to physicians and to the courts of law. There is, however, another type of psychobiologic disorder, one usually classified among the so-called psychopathic personalities, which demonstrates far more convincingly the difficulties that arise in appraising human behavior in the customary terms.⁸

At present the so-called *psychopathic personality* is not regarded as psychotic by the standards of psychiatry. A person diagnosed 'with psychopathic personality', is classed as 'sane' and 'competent' in the law courts. He is usually a person above the average in 'intelligence'. Not only is he free from the gross irrationality of the schizophrenic; he also lacks the fundamental delusions that we finally succeed in demonstrating behind the beautiful barriers of verbal logic rationalized by the paranoiac. The so-called psychopath, since he is free of psychosis as determined by verbal criteria, medically as well as legally, is not usually considered eligible for admission to the state hospitals or to federal psychiatric hospitals.⁹

⁶ E. A. Strecker and F. G. Ebaugh, *Practical Clinical Psychiatry* (Philadelphia: P. Blakiston's Son and Co., 1935).

⁷ For a discussion of *split terminology* and *evaluation* in neuropsychiatry, see Alfred Korzybski, 'General Semantics, Psychiatry, Psychotherapy and Prevention,' *American Journal of Psychiatry*, XCVIII (Sept., 1941), 203-214.

⁸ This discussion is not intended to apply to all types of disorder customarily grouped under the classification of psychopathic personality. It applies only to the type to be described here.

⁹ Hervey Cleckley, *The Mask of Sanity: An Attempt to Reinterpret the So-called Psychopathic Personality* (St. Louis: The C. V. Mosby Co., 1941).

One may justifiably be prompted to inquire why this person who is called 'sane' and 'competent' by law and by most psychiatrists should need to be sent to the hospital.

II

The answer becomes obvious if we consider his case not in the cross-section of our interview but in the longitudinal section of his history. Despite his charming manner, his freedom from any sign of 'nervousness' or maladjustment, his apparent trustworthiness and capability, we find that his behavior is a record of purposeless folly seldom attainable by other mortals.

Let us consider what we find in the actual records of such cases. For the sake of brevity let us abstract and list a series of typical incidents taken from a large series of patients ordinarily classified as psychopathic personalities, some of whom have been described in detail elsewhere. In this way we may get a fair idea of such a person's real behavior.

During the past several years, we learn, he has obtained dozens of excellent positions. He has shown himself highly capable, in the verbal sense, but has always, as if by deliberate folly, failed spectacularly or voluntarily left his source of livelihood for no reason intelligible to the ordinary man. Sometimes while earning twice as much money as he needs, he commits petty thefts. Again, just after a raise in salary, he will boast widely of the seduction of his employer's wife—sometimes falsely, sometimes in truth. Just before being promoted to a better position in business, he will sell large quantities of his company's commodity, well below cost, in a puerile impulse to swell his sales record. He is not confused in the ordinary sense and 'knows' that his folly will be detected at once. On another occasion while acting as host to customers for his company he will, despite the presence of many feminine entertainers and the immediate availability of more than even a Solomon would require, cross a nearby state line and bring in other women, violating the Mann act and plunging himself into disaster. When one finds that he had no particular interest in the imported charmers, never in fact having seen them before, and that he made no attempt to sample their wares, one is at a loss to account for his action. Relatives have obtained highly paid political sinecures for him, positions requiring his presence merely for an hour each day. Even this proves to be too much for him. He settles down to glum, solitary drinking and does not come to work at all.

He has been arrested dozens of times for petty thefts, forgeries and disorderly conduct. Faithful friends and relatives rush to his aid and release him. When serious charges are brought against him, his attorneys very often succeed in having him sent to a psychiatric hospital. After study in the hospital, no evidence of a recognized psychosis is found and he is released to renew his trouble-making in the community and his active personal failures.

He has been married for years but has never shown any effort to support his wife or children. He protests eloquently his high romantic passion for his wife and describes his devotion convincingly as immortal and all but Quixotic. He is especially articulate along these lines when his wife, worn out after years of neglect and abuse culminating in his casually bringing public bawds into the house, has decided to di-

voice him. He writes verbally passionate letters to her, protesting not only his rare and magnificent love but also pointing out the terrible injustice of her proposed act, implying that, though he is too devoted and too heartbroken to feel bitterness, God will never forgive her for this cruelty toward him; that in the next world she will still be dogged by the anguish of remorse. His wife nearly always is won over. If she is slow in agreeing to take him back, he telephones her repeatedly, begging her to buy poisons for him to use in killing himself. Besides his wife, he usually wins many other feminine protectors and benefactors who nurse him through feeble, maudlin sprees, and who obtain new positions for him and call physicians and friends to his aid when he grandiloquently threatens suicide by telephone from a brothel or feigns paralysis after lying out half-drunk and alone in some uninviting cornfield. Though he often has casual sexual relations with women he never, apparently, becomes attached to any (except in the sense of indiscriminate dependency) and his erotic drive seems not only uncomplicated but extremely feeble. His surprising ability to keep women, highly virtuous and otherwise, interested in him and always ready to succor him apparently lies in his helplessness. The impulse to mother a baby, protect it and help it grow up, seems to be a persistent one in women; and they seldom see that this is a baby who will never grow up.

When questioned about his ever accumulating follies and failures, he always explains them away glibly or freely admits them as faults, which he now understands so well and is so thoroughly determined to avoid that it is difficult not to believe him bound for high and sure success. After he has repeated his failures, he gives the same impression of confidence and sincerity as before. On giving his 'word of honor' to his physician or his relatives, he looks one straight in the eye. Though he knows well that he has given and immediately broken this pledge dozens of times, he expects to be taken with solemn seriousness. He does not seem to be pretending in the ordinary sense—that is, as a person who realizes he is pretending—but rather to be unaware of the difference between pretension and genuineness of purpose.

He is completely untrustworthy, and breaks his word as readily as he will cheat an acquaintance or a benefactor, even when it will obviously bring him to personally painful consequences. If he cannot, by rationalizing, escape admitting his lies, he will admit them with a superficial appearance of shame and suffering that is deeply convincing but which, probably, is pure mimicry, and which delays him not a moment in repeating his betrayals. While a patient in psychiatric hospitals he regularly violates his parole, though he 'knows' this will cause him to be locked up on closely supervised wards with hallucinating and regressed psychotic patients. No punishment, however drastic or inevitable, prevents him from repeating his follies and violating every trust that is reposed in him.

Many persons with so-called psychopathic personality use alcohol not only to excess but peculiarly. Those who drink nearly always admit that it gives them no pleasure. They do not often become lively or convivial but sullen and solitary. Unlike the ordinary neurotic drinker, they cannot be shown to be seeking relief from some definite worry or solace from ordinary failures or griefs. They drink to drunkenness on the eve of a reconciliation with a wife whom they have won back by vigorous and

persistent vows of sobriety; or on leaving a hospital where they have been confined with patients they regard as 'raving madmen', in spite of 'knowing' that drinking will cause them to be returned at once. Typically, the so-called psychopath's drinking is done in solitude, often in uninviting fields or remote thickets. In the South he is often driven to such places by a colored boy, hired for the purpose, who stands by sometimes for several days while the cheerless drinker stumbles, cursing feebly, in the bushes or lies whimpering and half-sodden in the mud and weeds. When the liquor has been exhausted, his faithful driver brings him home.

III

Careful observation of such personalities over a prolonged period leads this writer to the conviction that they have little or no 'emotional' reaction in the ordinary sense to the general business of living. Nothing 'means' enough to them to induce consistent striving or to demand reliability or veracity. Though they react verbally as if they understand and appreciate ordinary human values, these values are inaccessible to them. Since they have never experienced 'love', 'pride', 'grief', 'shame', etc., they cannot conceive of what these mean as living experiences to the ordinary person. Being, none the less, very astute in a superficial sense, they can use all the words that are used by those who do participate in living at full psychobiologic levels. The psychotherapist cannot teach them about this aspect of living, or this dimension of experience, in any way except as a color-blind person can be taught 'what red is' to those who are not color-blind. He who is color-blind may learn to give the wave length of red in Ångström units, to speak of the 'redness' of blood and of the sky at sunset, to discourse at length about the hue, saturation and brilliance of various 'reds', but he cannot be taught to experience 'red' directly.¹⁰

If we assume that in the type of personality here discussed there is a failure to experience the more specifically human values or 'meanings', we can better understand his conduct. He is without the ordinary guiding orientations which enable the healthy person to pursue his aims successfully and obtain satisfaction and joy from his living. Failing at the full level of psychobiologic functioning,¹¹ he tends to regress, to sink back to less complicated modes of activity, to a less specific and less highly-differentiated biologic status. In a broad sense, this principle of regression runs through all functioning and all forms. The fish that is caught soon ceases to function as a fish, though cells in his body persist for some time in simpler biologic activity. Later, biologic activity ceases; the cells are no longer cells but less complex organic molecules. Eventually even these are broken down to the relatively simple and relatively functionless inorganic level.

If we regard the so-called psychopathic personality as suffering a *semantic dementia* or a *semantic dysergasia*, his clinical picture becomes more comprehensible. He shows no disorder at gross neurologic levels, no disorder at 'rational' levels; but at the semantic level, the level of evaluating and of experiencing life as a totally inte-

¹⁰ See Alfred Korzybski, *op. cit.*, and Hervey Cleckley, *op. cit.*

¹¹ Adolf Meyer, 'Leading Concepts of Psychobiology (Ergasiology) and of Psychiatry (Ergiasiatry),' *Proceedings of the Fourth Conference on Psychiatric Education*, National Committee for Mental Hygiene, 1939.

grated organism, he shows gross disorder. This disorder is often great enough, the writer believes, to be classed as psychosis. A person's failure to function at this level provokes regression and this regression is expressed in a not clearly 'conscious' drive towards failure and folly. He destroys himself actively at personality or cultural levels, though of course without 'understanding' in a semantic sense that he is doing so. This self-destruction we might, perhaps somewhat too dramatically, call a *semi-suicide*.¹²

This writer does not mean to imply that no changes of any sort in the central nervous system accompany the disorder described as expressing itself purely at a semantic level. Nor is it implied that no such changes occur in schizophrenia when we express doubts that schizophrenia arises primarily because of a local damage within the brain such as occurs in brain tumor or in encephalitis. It seems obvious that if one learns French, gets married or takes a trip to China, 'organic' changes in the sense of new engrams, differences in circuiting along the many neuronal pathways, are inevitable. These changes naturally affect the future reactions of the organism, the future experiencing of life. It does not seem grossly implausible to grant that vast and highly significant changes of function-pattern occur, probably in terms of biochemistry or at electro-colloidal levels, in the nervous system as a result of repeated and cumulative inadequate semantic reactions. If we say that 'psychogenic' factors probably play an important part in the development of semantic dementia (or of schizophrenia), we mean that the changes in the nervous system are, in large part, and perhaps primarily, those brought about by inadequate responses to the environment rather than those caused by a micro-organism, a virus, a neoplasm or a 'de-generation' originating intrinsically.

What experiences and what reactions to experience may play a part in the development of such a personality disorder as semantic dementia constitute a subject beyond the limits of this paper. It is the purpose here to describe briefly a type of disorder which is manifested only at levels of experiencing where the usual split-terms fail to be useful as communication. The terminology of general semantics and the extensional, multiordinal and infinite-valued orientations of general semantics as formulated by Korzybski¹³ immediately show their great usefulness in psychiatry when we consider this disorder. The disorder of the person with semantic dementia can not readily be stated in ordinary definitions but can be understood only in terms of experiencing or living. When we approach semantic dementia merely with verbal definitions, we are confronted by a picture of perfect functioning at rational, verbal levels, by a convincing mimicry of life—an impenetrable 'mask of sanity'.¹⁴ In distinguishing between the mask and what constitutes sanity, or healthy human functioning, we must work in terms of general semantics and of total experiencing, rather than in definitions and abstractions that fail to convey extensional details and relations.

¹² See Hervey Cleckley, *op. cit.*

¹³ See Alfred Korzybski, *op. cit.*; also by the same author, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

¹⁴ See Hervey Cleckley, *op. cit.*

ADOLF MEYER AND PSYCHOBIOLOGY*

THE MAN, HIS METHODOLOGY AND ITS RELATION TO THERAPY

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In the first half of the Twentieth Century, the influence of two great figures has been stamped on American Psychiatry: Adolf Meyer and Sigmund Freud. The Meyerian contribution, psychobiology, is at one and the same time a philosophy of science, a methodology of study, and a therapeutic plan. In spite of its profound influence upon the early development of psychiatry in this country, the term is widely misunderstood, its adherents are often accused of being one-sided, and its terminology has been called confusing; yet, its fundamental concepts have stood and will stand the test of time as the most reasonable hypothesis as to the nature and functioning of man. Modifications will inevitably occur: the fundamental philosophy remains to be challenged.

Psychobiology must be appreciated in relation to the men who formulated it. Its laws are the laws of all science; namely, to define the problem with which we are confronted, and which we are attempting to specify, to study the concrete conditions in which the facts occur, and can be reproduced, the total range of all the factors that enter into the experiment and working, the mode and degree of operation, the range of results, and specific samples or trials, and the potentialities of their modifiability. To insist that man as a living creature can be studied as objectively and as scientifically as any of the physical processes would appear, indeed, to be only common sense. Yet that very realization came late to general medicine, which had been hampered for years by the doctrine of psychophysical-parallelism; a concept which created a false dichotomy between mind and body, and excluded mental functions from the realm of general medical preoccupation. Meyer insisted that mentation was only one other special kind of functioning of the human being, and that its laws lay open to the same methods of scrutiny as did all other scientific facts.

This was Adolf Meyer at his most practical. Trained as a neuro-pathologist, his interests always lay pre-eminently in living, not dead, human beings. He insisted that ordinary common sense carried us far along the way; trained and critical common sense enables us to view the facts as they are without erecting superstructures of hypotheses about life. Meyer's therapeutic program was essentially practical. Being the son of a Swiss Zwinglian minister interested in philosophy and languages, it was inevitable that he must define his position in relation to man and his scientific credo for the responsibilities he assumed as a physician toward man. He was a monist in his insistence on viewing man as a unitary creature; a pluralist in his determination to work with any or all the facts presented to him. He viewed man within the framework of general biology. His individuation-concept insisted that man, like all other biological creatures,

* Some of the material for this article has been previously printed in the *American Journal of Psychiatry*, XCVII (November, 1940).

functioned as an indivisible unit. Throughout nature he saw that this was true. In chemistry he dealt with specific units, functioning as crystals; in biology he saw the same phenomenon, even though the special functions of growth, metabolism, and reproduction were present. This is true in the vegetable world (botany), as in the zoological (including motility). The more specific human functions begin to emerge with the segregation of the stimulus from the response (the so-called delayed or conditioned reflex). As we ascend in the zoological scale, we find the emergence of some degree of consciousness, and, finally, in man, mentation which allows the uniquely human capacity for symbolization. (The substitution of signs for reality; hence language and concepts.) He was opposed to making any system out of the parts or the part-functions whenever those functions were removed from the context or framework of the whole individual.

Meyer insisted further that no organism was a mere accumulation of all its component parts. He uses the term *integration* (not in the Sherrington sense) to mean that by virtue of the complex interaction of the component parts new potentialities become possible, the nature of which could never adequately be understood merely by analysis of the individual component parts themselves. Thus, the mental function (mentation) was not unique, or a detached process, only a special kind of functioning made possible by the particular integration of man's makeup. The gestalt psychology, in a somewhat different fashion, comes closest to this concept. When we think of man we think of a set of functions integrated into an adaptive unit, and this Meyer calls *the personality*.

Psychobiology, then, is that science which studies human beings, or personalities, as functioning entities, thereby distinct from psychology (dominated by a preoccupation with mental functions and entities), physiology (concerned with organ function), or anatomy (concerned with structure function). Meyer insists that we deal with patients as live biological organisms functioning in a specific mode of action. This emphasis on action is paramount. He is not interested in mere sensation or sensorial representation, or an exclusive use of symbols or verbalization. It is what the organism *does* that is important, and becomes the central feature of treatment; hence, Meyer's insistence on objective study, as well as his reliance on what the individual shares verbally. All mental functions are but precursors to activity, whether it be in smooth or striated muscular activity, glandular response, or overt behavior. Thus it is that psychobiology demands that we view personality function as part of the field of biology in its strictest sense. Psychobiology is not a study dealing with a special detachable sphere—that of mind—since it cannot disregard the fact that the human personality is a product of integration, each level of integration including the substance and nature and function of the next lower physical-structural components. This is what modern critical common sense observes, formulates and works with in practical life; events and performances of specific persons or live organisms obligatorily considered as mentally integrated functions. It asserts that when we deal with the facts about man and living beings, we cannot ignore the personality functions, but also that we cannot ignore the inclusion of all non-mentally integrated components without which there would be no human beings and no human functions. Psychobiology refuses to accept a psychopathology which is not out and out biological, that is, structure-bound as well as meaning-bound, working always in a setting or system of meanings.

The obligatory recognition of man as an individual biological unit, performing under the guidance of symbolization, is necessary for the fullest understanding of what constitutes the part functions and how they work in the integrated unit which we call the personality in action. Meyer rejects any parallelistic division into somatic functions or mental functions, preferring to view personality as an integration of all functions, of which mind is only one kind of functioning characterized by symbolization.

Man as the object of natural science is to be studied in his total performance, the overt as well as the implicit, for what he does, as well as for what he thinks or remembers, utilizing the data of observation and of scientific test as well as the material of introspection. Since in this unitary concept one recognizes the inseparability of structure and function, of physical and mental, he must be prepared to inspect all that is going on within the individual at any given moment, using physics, chemistry and biology to explain or modify that which it best explains, but preferring always to see the human subject as a balanced system, a ceaseless state of flux between that which is implicit and overt, conscious and 'subconscious', mental and physical.

Pathology cannot stand on mentation alone. It inevitably rests on physics and chemistry and physiology and is derived from an integrated entity, the patient—an entity with a life record or biography in making, a history beginning with the complaint and its story and precursors and grounded on a type of constitution, partly inherited and partly built up by experience and life exposure. To this the physician adds the direct examination, somatic, neurological, personal and social. These facts are then formulated in their own terms and the physician must be clear on the participation of psychogenic, neurogenic, organogenic, exogenic or constitutional factors, the course and development of the disorder, and the factors of potential modifiability. The overt behavior as well as the implicit functions are open to direct, objectively observable methods of study and analysis of concrete performance.

The subject or personality is organized not only in the present and the past but in his attitude to the future. He differs from moment to moment. The highly organized nature of his integration permits the data of the sense organs to be brought into perceptive and presentative function. Sensation, memories and anticipations are welded together through constructive imagination and held in interrelation through the associated assets which are focused as attention. Emotions and affects act as diffusely regulative tendencies. On the interrelation of all these special functions depend the qualities of inference and reasoning, planning and choice, action and decision. The result is seen in more or less effective overt performance.

Pathology consists in the disharmony that exists within these component elements that constitute the integrated individual. Treatment of the pathology demands an understanding of the dynamics of the person and of his working, to be pursued as analysis of the complex individual factors with final resynthesis into a more harmonious whole as the balance which constitutes well-being. Psychobiological therapy is objective in that it seeks to view all the facts in their natural setting. The data of introspection or recall are only one aspect of the totality. Thus psychobiological therapy is neither merely symptomatic treatment nor limited to psychotherapy. It aims to utilize the resources of the person to bring about melioristic processes, either in the structure or the organ or the person, sometimes by control of attitude, reactions and actions, or

the utilization of orientation in understanding and insight and planning, or the adjustment of effective and intellectual imbalances, and the correction of the consequences of preoccupations, dissociations and suggestions.

Understanding must precede treatment. The dynamics of human behavior are best understood in terms of a life biography obtained from all possible sources, from the events of which the dynamics are elicited. The dynamics lie in life, may enter at any phase of development, and may be modified by constitutional, structural or more personal developments. The facts to be dealt with may be sought at any level of integration. Where there are ways of affecting modification from the organismal angle (drugs and regulation of function) the resources are used, but there is also need of the inter-functional personality adjustment and personality functioning in the shaping of attitudes toward past and future, reality and fancy, and the balancing of interests and tendencies in various tasks. The choice of method must be determined by the individual case, not by recourse to typology or systematized sets of dynamic forces. For economizing purposes specific topics or facts are singled out for special study. The facts are reconstructed by the physician into a dynamic life story with motivations, so as to reproduce as nearly as possible the original evolution of the experiment of nature. The physician's role is to determine the modifiability of this material and the assets to be utilized so that the most effective readjustment of the patient's problems may be achieved.

It must be emphasized that treatment depends on understanding of the total dynamics and the dynamics are only obtained by a meticulous review of the individual personal history beginning at birth. Since every human being has a different biography, therapy must always be an individually modified program.

Meyer strongly emphasized that the focus of the investigation is oriented around the complaint or the symptoms. The patient who confronts the physician may or may not have his own complaint, but the examiner considers also the complaints of the family and of the environment. Thus the therapist uses the total situation for guidance, not only the material offered in a highly confidential psychotherapeutic relationship. The complaint must represent the real reason for the seeking of help, and is not merely the first statement offered, often enough as an irrelevant detail of the more fundamental unrest. The origin and development of the complaint studied chronologically in the total setting constitutes the present illness. The elaboration of the complaint is obtained from the patient or, with unco-operative patients, from responsible individuals in the environment. Much will depend upon the physician's ability to establish collaboration in such a relationship and to create a working basis for exchange of material dependent upon confidence and understanding. The physician, therefore, must be capable himself of a relationship of reliability, understanding without emotional involvement, and scientific detachment. The physician has his responsibility, but on the other hand, one counts also on the patient's assumption of responsibility and participation in the treatment procedure; for the physician, no more than the patient, is a purely passive agent in the situation. Rapport is important, not alone as words but also when it leads to the implicit and overt changes which spell constructive action. The initial task then is the establishment of confidence based upon the evidence of un-

derstanding, the development of security in the treatment procedure, and a guarantee of perspective in the understanding of the total range of the problem.

The complaint then becomes reduced to experimental pathology, where pathology is understood as the presence of imbalance or disharmony of function. Therapy must be adapted to the individual pathology and must avoid any diagnostic rigidity or adherence to rigid unitary dynamic concepts or techniques. A natural talking relationship is preferred wherein the individual's spontaneity is protected and encouraged, to give freest expression to his own needs. More than one physician may share the responsibility of therapy, although ideally one physician should carry through the emotional relationship. Where material is not easily available, indirect methods are utilized for the obtaining of unrecognized or hidden content, including the word association experiment, analysis of dreams and phantasies, Rorschach technique, hand-writing analysis and the special method of free association. Meyer prefers, however, the plasticity of a direct conversational relationship, particularly when the physician's skill permits the patient to retain his naturalness, adhering to his own story in his own terms. The wise use of questioning is utilized to help the patient best present his story and to provoke curiosity for the eliciting of further facts. It has been claimed that the method was largely a question-answer-procedure. In Meyer's own hands this was never true. He had limitless patience, and a great respect for the patient's own spontaneity. He never probed for facts, and was willing to wait until the patient was ready to share them. There was nothing rigid in his own history taking. He permitted the patient every opportunity to bring up the preoccupations that were most pertinent, and to exhaust these leads before offering further suggestions for additional material. It has often been claimed that Meyer quite under-estimated his own talents in this regard. Certain it is that he knew the value of silence, knew how to avoid disturbing topics that the patient could not profitably share, knew how to wait for weeks at a time for the emergence in its proper sequence and setting of the patient's revelation. His formulation of his questions was so carefully phrased that it permitted his patient infinite latitude in his responsiveness. He never created a situation in which the patient had either to defend himself or retract his statement.

Meyer never accepted the transference relationship in the psychoanalytic sense. He was not afraid of a strong personal bond between himself and his patient, yet he never traded on it. It was in his unwillingness to recognize the transference and negative-transference relationship that he differed most widely from the Freudian concepts.

He taught that in no sense do we adhere to a rigid question-answer method. The effort is to guide the patient in an orderly presentation of the material, to assist tactfully in the eliciting of highly sensitive topics, and to aid him in the fullest and most effective expression of his story. An orderly procedure is maintained in the systematic gathering of the original story and the psychiatric examination, but thereafter the main effort is to give rein to the patient's own spontaneity and natural curiosity. Tact, sensitiveness and sometimes silence are effective. The patient's own reticences are always respected. Meyer recognized that forgetting and repression may also be a healing process. Plasticity is preserved in recording the material, which is more economically and scientifically done at the time of the interview but may be deferred if the patient's sensitiveness demands.

Therapy begins with an equal recognition of that which works, as well as that which works poorly. The aim is to utilize the immediately available assets in a course of action with the plan of ultimately incorporating that which works less well. The goal is toward restoration of spontaneous activity, the re-establishment of the best natural flowing of behavior that the individual is capable of under unhampered circumstances. For purposes of clarity the physician uses a work sheet containing his initial formulation, his later revisions, his statement of the gaps to be explored. Therapy begins with the first interview and includes an initial formulation to the patient which is devised to lead to new action. The physician tries as much as possible at each subsequent interview to sum up the material obtained so that the patient may carry away something concrete from each discussion, or that he may see the interrelation of the material presented to the total problem. Naturally this is not always possible in every interview. The material presented may have little bearing upon the specific problem or may not be forthcoming at the time of the interview. The patient may only revert to it much later in the treatment. The physician's problem, however, is to evaluate the pertinence of the material at discussion to the total problem involved so that the final synthesis may bring about a summing up and reassortment of all the available facts. The initial formulation attempts to use what dynamics are at hand for the patient's own understanding and acceptance. Then instead of boldly presenting him with the facts of what constitutes a normal point of view, the physician takes the patient's actual statement and reformulates that in such a form that it comes as close as he or she will be able to digest to that which the physician considers the more perfect formulation. In Meyer's hands this became a great art. One tries as far as possible to keep the picture and the problem of the patient in mind. The physician has his solution but he has to work with the patient's material and to express it in the terms in which it is given and to offer his help on that basis. In such a manner the patient is likely to get a sense of satisfaction that the physician understands him. He gets also some measure of explanation expressed in his own actual words. The physician must realize that the patient is not likely to understand a formulation of how the problem sizes up medically in the physician's particular orientation as long as one adheres specifically to the material and terms which the patient has himself used. One tries to keep the problem clearly within the realm of one's own best knowledge and to formulate it to the best of his common sense and not to get too far beyond what the patient is able to rise to at that particular moment. In such a formulation, the assets to be utilized may be enumerated, the final goal may be hinted at, the gaps in information may be stated frankly, the general plan for the further study of the patient's needs and the steps in procedure may be formulated. Gaps are bound to occur. Discussions may bring forth relatively little that is new or pertinent. The physician may have clearly in mind for discussion at a later date items that his medical insight may consider important. The work sheet should give evidence of his own line of reasoning, the directions of his own curiosity, and the status of the developments from week to week of the therapy. At the same time a modified formulation may be necessary for the family, the nurses in charge, or the referring physician that they, too, may be prepared for co-operative action. Clarification of the fundamental disturbance may come through twenty-four-hour hospital observation. The physician depends not alone upon what the

patient says but upon his behavior during the interview or during the twenty-four-hours in hospital; how he meets the actual problems of socialization encountered on the ward, how he responds and acts in situations as they come up from day to day in his actual living. Whether in-patient or out-patient, an actual plan of living may be offered for the period of treatment, wherein a depressed patient, for example, has a day planned in harmony with his retarded capacities.

The initial study should result in the physician's understanding of the pathology. The specific items to be dealt with as the problems of psychiatry can be enumerated relatively simply:

1. What interfunctional imbalances may do along the line of minor interferences or complaint disorders (the so-called psychoneuroses), the disturbances due to dominating affects and their fixations, and content imbalances, specific disorders of grasp, panics, the developmental feeble-minded and psychopathic deficiencies.
2. What poisons and metabolic disturbances can do to the personality.
3. What leading structural disorders of the brain can produce toward disorganization of psychobiological functioning.

These are the items of a general pathology. In every case the physician must evaluate the part played by the successive sets of integration, studying them by all means that physiology and general medicine afford with always the inclusion of the person-resources, the more or less specific domain of the psychiatrist. In view of the impossibility of making rigid categories, the work deals with the descriptive principles of reaction sets or quasi-experimental groups of facts requiring definition in the etiological factors at work. Avoid classifying the person as representing a disease. The task is to trace the origin of the complaint genetically in past experiences and to organize all the available facts of the person as they work dynamically at the moment. Formulation based on traceable fact rather than on inference is preferred, and dynamic terms derived from life are chosen rather than systematizations.

For practical therapeutic purposes the physician in formulating nature's experiment may choose first to deal with the simplest integrations, i.e. physico-chemical, general biological, anatomical, physiological, and to consider the psychobiological adjustment where these are found inadequate for the total problem. Each integrative set is to be studied in its own rights and terms as long as we do not neglect the total organism. Thus anything that promises melioration in the part-functions is utilized for its potential effect on the total functions. Sedatives, pharmacological aids, hydrotherapy, occupational therapy, and consideration of the total balance that constitutes a day's activity may be utilized. Insulin and metrazol shock may force an appeal to the person at a more physiological level of integration. There is no hesitation in using hypnosis, persuasion and suggestion, for their more immediate effects upon the symptoms. Actual re-education, particularly in structural defect cases or in the thinking habits of a schizophrenic, may be employed. The therapist accepts responsibility for the patient's twenty-four-hour comfort and behavior, not alone for that which takes place during the therapeutic discussion period. He obligates himself to provide as much general rest and healthy balance as can be obtained during the actual treatment procedure. A plan of living may be worked out in which we may ask for abstinence in the use of alcohol and drugs. Actual sexual needs and the amount of urge may be better evaluated during periods of sexual abstinence.

There then remains the personal therapy based upon understanding of the individual's own needs and always dependent on past experience as well as future goals. This is a field of psychotherapy. In the Meyerian scheme, psychotherapy is only one form of treatment, not an exclusive treatment. Here, again, Meyer differed fundamentally from the psycho-analytic approach. He was too much of a pragmatist to ever subscribe wholly to the concept of unconscious dynamic motivating forces. He was willing to speak of 'the more or less conscious', recognizing that many facts were not immediately subject to recall, but he would not make an exclusive dynamic pattern out of repressed or amnesic or unconscious factors. Similarly, he could not accept the predominant role of childhood experiences as the etiological factors in adult neuroses. He saw life with too much plasticity to feel that the adult was forever time-bound to his childhood. He recognized that much of the subsequent personality-pattern is laid down in these early formative years, yet, with his avoidance of any fixed dynamic patterns he could not go beyond this. In his hysteria concept, he recognized the role of 'selective' forgetting, of dissociation, and of substitutive phenomena. He had a horror of clichés and stereotypes. Meyer begins the study of each patient as a new experiment of nature, without preconceived theories and without the bias of any systematized theories of dynamics. It is here that the patient has the value of ventilation, of sharing past experiences, of desensitization, of re-orientation into more constructive choices and actions. Treatment is active in that it may lead to encouragement toward discussion along specific lines. Periods of rest may be utilized for consolidation of gains and the opportunity for putting into effect the new insight and orientation.

The detailed personal review is accomplished by the means of distributive scrutiny or personality study. The aim here is to trace the origin of the complaint through the component personal facts of the individual make-up. Thus the biography is followed by an intensive study of the pertinent drives and activities, the range and efficacy of the intellectual processes, the extent of participation, and the role of the diffuse emotional factors. This is followed by a study of the childhood, family and general social successes and failures, a survey of the life-sexual development, the integration within the broader social group, the attitude to the future, religion, ethics. The individual personal differences and the similarities and special problems are clarified, and the final resynthesis aims toward a reorganization into more harmonious action. Successes are analyzed as well as failures. Since man lives largely in terms of symbolization, therapy must include understanding of his own personal utilization of symbols as a method of communication either of conscious or less conscious material. This material of relative unawareness may be reactivated by utilization of dreams and phantasies. Thus one attempts evaluation of the multiple factors at work with a determination to see all the factors in their setting and how they contribute to the final problem, with a conviction that in real life one rarely reduces human problems to a single or a specific factor. The patient may be asked to write out this material along the lines of a detailed questionnaire which is available and which is utilized only for purposes of economy of time and for the orderly and systematic review of the total range of the special functions. The material thus obtained is always reviewed with the patient, allowing him to elaborate or to correct, and helping him to sum up pertinent facts in the most helpful perspective. The writing was far more often dispensed with in favor of personal

discussion and the emotional relief of ventilation where the written record did not lead to conciseness and personal clarity. The method permits of a complete survey of the personality structure, doing full justice to every aspect of the make-up and with the specific purpose of tracing the components to their dynamic foundation in the life experience. Meyer had such a need for incisiveness that the time-consuming method of free association could have no appeal for him, other than as a research procedure.

Thus far the individual alone has been considered, but man is integrated also within his family, his group, his community. The therapist owes an obligation not exclusively to the person but also to the total situation. Thus treatment may have to include modification and re-orientation of the family, friends, employer, and indeed the community, since they often become vital factors in carrying out the ultimate recommendation for the patient's future growth, as in the follow-up therapy of the schizophrenic patient. Much useful information may be obtained from these sources which may throw light on the individual's problem, may shorten the treatment period, and may lead, in wise hands, to a helpful re-evaluation by the patient of his total problem. They may also serve as checks upon the efficacy of the treatment procedure as well as contributing to the mental hygiene needs that extend beyond the patient himself.

The final goal is the preparation of the patient for constructive action. This must involve restoration of the physiological needs for sleep and rest, the general physical health, and the preparation for productivity in work and recreation. Thus, the final synthesis aims at an active re-integration of the total individual leading to harmony and internal balance. The effectiveness of therapy will likely depend upon the physician's ability to adhere closely to life and to maintain the plasticity of life itself. The final goal is to make certain of that which is acceptable to the patient and physician, worked out in terms of mutual consensus. In the final adjustment the physician must recognize the 'more or less' along lines of long-term values, recognizing also the possibilities for constructive growth in action as well as the specific hindrances of past experience.

In offering these general lines of procedure, one is aware that no general rules will fit every specific case. One must be prepared for failures as well as for successes. Incisive therapy may be relatively brief, or protracted for months in cases of unco-operative and resistant patients or deeply ingrained disturbances. The process of leading the patient out of his difficulties calls for patience, optimism, sincere belief in one's own methods, a determination to see the thing through, the preparedness to meet setbacks and reversals without losing sight of the constructive end-goal, and the plasticity and imagination to see within the patient the nucleus of that which is closest to normal and still usable. Meyer had far more of this than most of his pupils.

To sum up, psychobiological therapy must concern itself with every component of personality organization, utilizing leads at any level of integration, recognizing man not only as an individual but as a socially integrated unit, remaining free to work with any methods of general science that offer help, committing therapist and patient to a philosophy or way of life which takes into consideration the specific needs and limitations and opportunities within the person. The principles of psychobiology are basically simple. Meyer entered the psychiatric picture during a period of confusion, and of rigid attempts at definition of disease entities. He largely abandoned the formal

preoccupation with diagnosis, course, and outcome, and insisted in its place upon a dynamic psychiatry: the result of his determination to find out why and how the facts arose. This was his great contribution. He brought life into a static subject; he brought psychiatry out of academic chambers into the living world of medicine, and in his direct, forthright manner, he stimulated many minds to approach the problems without preconceived bias and with the courage to look at the facts as they are. If this has become so evident that it prompts the listener to ask, 'Is that all there is to psychobiology?' then Meyer's task has been well done. Forty years ago these facts were not evident. Medicine has once again re-asserted its rights and its responsibility: treatment of the human being in such a fashion that no group of facts can be excluded.

GENERAL SEMANTICS AND THE PROBLEM OF 'RAPPORT' IN PSYCHIATRY

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The meaning of the word *rapport* is usually defined in the dictionary as, 'A relationship of harmony or conformity.' Its more specialized meaning in the field of psychiatry was originally associated with the phenomenon of hypnotism. In this case the subject was considered to be in some intimate relation to the operator and at the 'mercy' of his 'suggestions'. While in this state he remained responsive only to the commands of the person who had induced the condition. Later the term was applied in psychotherapy in a somewhat different sense. Here, the establishment of 'rapport' meant that the psychiatrist was able to 'communicate' with his patient in such a way that the verbal material he presented was 'understandable', and could be *accepted and utilized* by the patient. Until that relationship could be achieved, no effective therapy was possible. It was said that the 'patient could not be reached'. Or, as Korzybski puts it in his seminar lectures: 'It is necessary to *get under the skin* of the student before he can be helped.'

In psychiatry, more than in any other field of medicine, we are almost wholly dependent on 'language'. It is the chief means by which the patient can tell us his difficulties, and also the chief means through which we can help him. In other fields more 'objective' methods have been developed, especially in the laboratory. These help us to 'check-up' on what the patient tells us about his sensations and symptoms, and enable us to arrive at more accurate formulations of what is producing his difficulties. In psychiatry we have few such 'objective checks'. Therefore, unless we have a clear understanding of the relation of language to the personality-in-its-environment, we are in danger of never reaching an adequate formulation of the specific problem to be solved. 'Rapport' cannot easily be established if linguistic difficulties cloud the way. A defective appreciation of the issues involved in the use of language, is as hampering to the psychiatrist as a defective instrument in the hands of a surgeon. It may not completely incapacitate him, but it certainly impedes his performance, and increases, unnecessarily, the difficulties and dangers of any procedure.

Ordinarily the establishment of 'rapport' in any psychotherapeutic procedure is a difficult, time-consuming, and complicated process. The problem varies, depending on the form and severity of the 'illness'. In applying the methods of general semantics¹ in my work I have found certain procedures which are helpful. In the first blush of my enthusiasm, I had the usual tendency to utilize this new 'instrument' indiscriminately, to employ it routinely in a similar manner in every case, with little regard for the

¹ General semantics, the *modus operandi* of the non-aristotelian system as formulated by Alfred Korzybski and expounded in his seminar lectures at the Institute of General Semantics. For explication of the leading terms and formulations of general semantics as used in this paper, see Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941), also 'General Semantics, Psychiatry, Psychotherapy and Prevention,' *American Journal of Psychiatry*, XCVIII (September, 1941), 203-214.

individuality of the patient as a person, the current phase of his illness, or his specific problems. I overlooked the fact that any method must be carefully adapted to the particular problem at hand in order to obtain the best results; and that even then, poor results probably are forthcoming in a certain percentage of the cases. Having come through some of this initial 'fog' with only slight 'damping' of my ardor, I found that I had better apply some of this extensional discipline to myself, before I sought to impose it on others. It then became apparent that it was necessary to do a little differentiating myself, i.e. take into consideration the 'types' of patients with whom I was dealing.

II

According to the present inadequate, but still useful system of psychiatric classification, two large groups of patients stand out: the *psychotics* and the *psychoneurotics*. I found that the problems in applying general semantics were significantly different in cases classified in one or the other of these groups. To avoid a theoretical discussion of 'diagnosis' and 'classification', allow me to make certain 'dynamic' assumptions for the purpose of differentiating the two groups.

Let us assume that the presence of a *psychotic* condition can be established on the basis of finding an impaired 'reality-testing function'; that we can explain the patient's delusional 'ideas' as a result of simple, primitive attempts to rationalize his feelings and sensations in a manner which is orderly and satisfactory to him; and understand his bizarre behavior as merely motor activity in accordance with his delusional formulations. His 'feelings' have become 'split-off'. His 'cortex' no longer exerts a relatively adequate control over his lower centers. The relation between these nervous structures has become altered in such a manner that 'pathological' effects are evident. These effects appear in his verbalizations. As Dr. William A. White says: 'The psychotic patient's language (and thinking) resembles that of the infant or primitive. Anything which produces in him a similar sensation as something else, results in the identification of the two events.' From this point on the person no longer stops to discriminate adequately. His feelings become confused with factual experiences, and there is no longer the tendency to refer his 'emotional' reactions to 'reality'. He no longer has any 'check'. Many *symbols* become *signals* for him,² and his reactions are 'frozen', 'rigid', and no longer adaptable. The psychotic clings to his feelings and sensations. These become his only guide for action; his only 'reality'.

The *psychoneurotic*, on the other hand, remains in contact with 'reality'. He realizes that something is 'wrong' with him, but finds it difficult, if not impossible, to reconcile his desires and tendencies with the 'external' demands made upon him by his social environment. In short, he is painfully aware of deficient control over his 'feelings' but is unable to help himself. His problem involves the existence of an inefficient system of communication with 'objective reality'. There persist in him certain verbally-energized mis-evaluations, which are fundamentally 'vestigial' from an early period of his life. These remain unconscious, but active, and capable of a wide variation of manifestations which have become troublesome if not incapacitating. It is as if these persistent defects are retained in the form of automatic reactions on *non-verbal* levels

² See Alfred Korzybski, *op. cit.*, pp. 333-334, 338.

capable of releasing disturbing tensions on an appropriate *signal*. They also have their counterparts on the *verbal*-level in the form of 'defense-mechanisms'. The patient always has a 'logical' excuse for his feelings and behavior, which suffices temporarily as a 'smoke-screen'. But like a 'smoke-screen' it is only temporary. When it becomes necessary for him to spend the greater part of his time and energy erecting and maintaining many 'façades', in order to delude himself into a good opinion of himself, he becomes inefficient and confused. If the 'external tension' does not decrease, he may be forced into a 'panic' or retreat into 'conversion symptoms'. This last serves as an 'irrefutable' refuge from the increasing pressure of having to 'explain to himself'.

In comparing the *linguistic* aspects of the problems in these two groups, it becomes evident that the language of the patient is able to provide him with a means for prolonging his illness. In both types of patients a great deal of 'pathological' activity takes place on verbal levels. It is the undisciplined utilization of words which allows the patient to hide from himself an 'objective reality' for so long that he has been able to manufacture for himself an amazingly complicated world before he comes for treatment. How then is it possible to effectively help him to adjust—to evaluate his environment correctly—without first regulating the chief 'instrument' he uses to deceive himself? I do not wish to imply that all cases of 'mental' disease and 'emotional' instability are linguistically determined and that once this defect is overcome, we have wiped out the entire problem. I do wish to emphasize, however, that one of the chief obstacles to be dealt with in the field of psychiatry is implicitly the problem of a correct evaluation of 'semantic' issues, i.e. the neuro-linguistic and neuro-semantic mechanisms and environment. There is perhaps nothing more pathetic than a linguistically disoriented physician pathetically leading an equally confused patient to a supposed 'Nirvana' of 'complex-free' existence.

III

I have briefly delineated the different problems presented by these two groups of patients in regard to the task of establishing contact or 'rapport'. I have also pointed out the function of existing neuro-linguistic orientations as primary obstacles to be overcome. In the case of the *psychotic* it has long been recognized that the chief difficulty in therapy has been in 'getting to the patient'. The problem seemed almost hopeless during the long era prior to *shock-therapy*. Primarily because it appeared that insulin and metrazol in some way produce this 'contact', many psychiatrists became enthusiastic. It seemed that we had at last found a way of penetrating the 'fogged' consciousness of the psychotic patient, and making him 'listen' to us. There seems to have been considerable hope in the minds of the physicians that once this was accomplished, the modern psychotherapeutic methods would be more effective in producing a 'permanent' remission of the patient's 'illness'. But after the first wave of enthusiasm for shock-therapy had passed, reports of a large number of relapses began to crowd the literature. The newly-won advances seemed lost when patient after patient retreated again into his delusional world. Of course, not all patients who improved lost the ground they gained with shock-therapy and the point that is now being made is intended to apply particularly to those who do not retain their improvement. To enter upon a discussion of the 'causes' of mental disease and attempt to explain the effects of shock-therapy, and the reasons for the relapses, is beyond the scope of this paper.

However, two facts stand out: (1) Shock-therapy alone is not *the* answer to the problem of the psychosis. (2) Current psychotherapeutic methods appear to be inadequate to prevent relapses in many cases.³

In my dynamic formulation of the structure of the psychosis I implied that the *psychotic* is linguistically and semantically isolated from 'reality': that he had reversed the 'law of development', and was preoccupied with his 'feelings' which he secondarily 'projected' into the environment. During this period it is impossible to establish sufficient 'rapport', verbally, to embark on any course of therapy or training. In my opinion, shock-therapy is our only real hope at this stage. In the cases in which it is effective, we can consider the clarified consciousness the result of a temporary 'disintegration' of the 'structure' of the psychosis. It is as if the false-to-fact organization of the patient's feelings, and their thalamo-cortical correlates were scattered. The neurological channels which had become facilitated during the delusional phase of the illness become disorganized. The patient now no longer possesses delusional, though satisfactory-to-him, cortical formulations to explain sensations. It is during this period, when his attempts at re-formulation force a resumption of some degree of 'free' cortical activity, that 'rapport' can best be established. By instituting at this point a simple discipline in the extensional methods of general semantics, a more adequate system of symbol-situation (fact) relationships can be introduced.

Ordinarily the psychotherapy chosen at this time consists of bringing to the patient's attention numerous 'conflictual' situations he has experienced in the past. Much too often the result is a 'panic reaction' which causes another retreat into the psychosis. It is for this reason that I have welcomed procedures suggested by general semantics which do not entail these dangerous potentialities.

I will discuss two of the most successful procedures I have employed. The first of these I borrowed and adapted from contact with the technique of *finger-painting* which was first brought to the attention of child-psychiatrists by Miss R. F. Shaw, and originally was co-ordinated with child analysis. In my work I employed the same technique to 'reach' psychotic patients, once the shock-therapy had sufficiently broken up the 'structure' of their delusional world to make it more possible to undertake psychotherapy and training. I found that one of the constantly repeated remarks of these patients was: 'I like to do this. It sort of relaxes me. I always feel less tense while I'm painting, and for a while afterward.'

It seems to me that this is another bit of evidence that one of the chief difficulties of these patients (and they are aware of it) is the existence of 'tension' on the verbal levels. They find their language inadequate to express their 'thoughts' and 'feelings'. Since it is necessary for the physician to first *understand* the language of his patient, before he attempts to give him a more adequate medium for evaluating the world to which he must adjust, some technique such as finger-painting seems of value. Finally, the medium of 'painting' pictures tends automatically to bring the vagueness of ordinary verbal expression down to a more concrete level of experience.

To illustrate the manner in which this takes place, allow me to cite one case. Miss A was a patient who came under my care at the Psychiatric Institute with a

³ See, e.g. Jules Gelperin, 'Spontaneous Remissions in Schizophrenia' (Cincinnati General Hospital, 1933-37), *Journal of American Medical Association*, CXII (June 10, 1939), 2393-2395.

diagnosis of manic-depressive psychosis. During the first few months in the hospital she was almost completely unmanageable, and talked almost continuously in a loud voice. She followed every impulse, and was extremely and often embarrassingly suggestible. After several weeks of insulin therapy, she became quieter but assumed the withdrawn attitude of a 'catatonic'. She was obviously hallucinated, her lips moved continuously, and her answers to questions were usually irrelevant. By chance during ward-rounds with a group of physicians, I chose her for demonstrational purposes. In an attempt to establish 'contact', I whispered to her. She promptly answered the question I had asked her. When I reverted to a normal speaking voice, she no longer gave relevant answers. It was then that I decided to put her to work, finger-painting. At first she wasn't interested, and for some time, it was necessary to repeat instructions to her on each occasion. Her 'paintings' remained random scrawls for a period of several weeks, and she mumbled constantly as she worked. Then, gradually she began to make a hill extending from one side of the paper to the other. Shortly after that, she was often found crying bitterly. One day when she had made the hill and erased it, she 'drew' a tree, after which she burst into tears. She was unable to say why she cried, but in a few moments she pointed out the tree, which she had drawn and with some pride and satisfaction stated, 'I really drew it. Drawing always scared me. I thought I could never do it. I used to hide my pictures when I was a child in school. I was ashamed of them. I was so worried and upset when I found I had to teach art in the school.'

This patient was born into a family in moderately comfortable circumstances living in a rural community. The father was a very passive person, who preferred the company of the patient's more capable, independent, and energetic older sister. The mother was a domineering, rigidly moralistic individual, who constantly 'babied' the patient and accentuated her real 'dependence' (since she was a sickly child) by establishing a persistent 'mother-baby' relation during the entire life of the patient. Miss A's adjustment to an adult existence rested chiefly upon an interest and perseverance in music. In early life she established herself in the affections of others through this ability. But later she was unable to use it as a means of livelihood; music served chiefly as a technique for endearing herself to others and covering up her seriously defective social and sexual adjustment. Under pressure of circumstances, she accepted a job teaching in a country school several hundred miles from all the protection she had known. Here she also had to teach art as well as music. After three months of attempting to 'establish' herself by using all her old 'techniques', she found she was fighting a losing battle, became 'panicky' and broke down with numerous somatic complaints. It was necessary that she return home. Here, under the 'loving' care of her mother, she rapidly recovered, and remained until it became inevitable that she find work to support herself and contribute to the family. Under this 'pressure' she again left her home to attend school in Chicago, where she broke down completely.

To tell this patient that she was 'acting like a child' and wanted to be taken care of, loved, and admired as if she were a child, would have been useless. Even when she began to be able to talk more coherently about what she had painted, she became upset whenever the subject of her difficulties was brought to her attention. She launched into a recital of her symptoms and rapidly retreated into the incoherence of her psychosis. It was only after a period of several weeks during which time she came to understand

the physician through the medium of finger-painting, that she, herself, expressed an understanding of her fundamental difficulties. For many hours we talked about the 'hill' and the 'trees' which persisted in her drawings. She enlarged the picture and made houses, men, and women. Gradually she told her story in this way, without anxiety or retreats.

The point I wish to make is that by means of this procedure I was able to reach a patient and effectively co-ordinate her 'thought' and 'feeling'. It was done:

1. by providing a medium for the expression of abstract problems in accordance with the 'law of development' (i.e. that 'thought' and language in their development change from feeling, concreteness and perception, in the direction of 'reasoning', differentiation and abstraction).*
2. by instilling a renewed confidence in verbal expression (this time more satisfactory to the patient in that the verbal symbols she now used stood in a more accurate relation to that which she used them to represent).
3. by making the patient visually aware of the process of 'abstracting' by constantly referring to her original more concrete non-verbal expression in the paintings.
4. and finally, by restoring to her a means of escaping from the terror of a secondarily-imposed 'isolation', and removing the 'distortion' that such an existence, apart from 'reality', produces.

IV

I will mention only briefly another procedure I have used with psychotics and in which I have applied the methods of general semantics. Group psychotherapy has long been employed with varying degrees of effectiveness, but for the most part the method has not found wide use.⁴ I have found it helpful especially with psychotics, but only with small groups.

In attempting to establish contact with a patient who has shown signs of improvement under shock-therapy, one of the difficulties is to hold his attention. He tends to 'drift away' frequently. I try to take two or three patients who superficially present similar 'clinical' pictures, and whose backgrounds do not vary too greatly. When I was speaking with each one separately, we frequently wandered into endless abstractions, which the patient unconsciously used to avoid something more 'painful' and 'dangerous' to him than the illness into which he had retreated. As stated previously, the psychotic is a 'mass of feelings' and he places these first for consideration. He is constantly preoccupied in 'explaining' them. It has been found, however, that when

* The 'law of development' with its implications for language of the 'abnormal' is discussed in an article by William A. White, 'The Language of Schizophrenia,' *Archives of Neurology and Psychiatry*, XVI (1926), 395-413. This 'law' follows an earlier formulation by A. Storch. Cf. A. Storch, 'The Primitive Archaic Forms of Inner Experiences and Thoughts in Schizophrenia,' *Nervous and Mental Disease Monograph Series*, No. 36.

⁴ It happens that Dr. A. A. Low of the Psychiatric Institute, University of Illinois, Chicago, has developed this technique uniquely. Dr. Paul Schilder, in New York attempted to reach more patients psychoanalytically by this means. He reported some success. Cf. his *Psychotherapy* (New York: W. W. Norton & Co., 1938), pp. 197-225.

Dr. Low's work is reported in 'Group Psychotherapy,' *Illinois Psychiatric Journal*, I (July, 1941), 3-4. See also S. B. Hadden, 'Treatment of the Neuroses by Class Technique,' *Annals of Internal Medicine*, XVI (January, 1942), 33-37; S. R. Slavson, 'Group Therapy,' *Mental Hygiene*, XXIV (January, 1940), 36-49; E. N. Snowden, 'Mass Psychotherapy,' *The Lancet* (December 21, 1940), 769-770.

more patients are present, any one of them can be reached more easily and for a longer period of time, if the physician talks to the others present *about him*. He is then apparently on the alert for any mistakes and deprecating insinuations which might be made. We make use of this 'defense' for gaining and holding his attention. It has also been found that a 'mental' patient is similar to the average individual in his curiosity about the troubles of others, probably for purposes of comparison and gaining help without running the risk of 'exposing' himself. On the other hand, he frequently evinces resentment and withdrawal, when he considers the queries and remarks of the physician an 'invasion' of his own privacy. By this technique we can frequently circumvent his defenses. Knowing the histories of all the cases the physician can choose to emphasize the inadequate adjustment mechanisms common to all.

The group interview is held 'down to earth' by placing the 'complaints' and the analytic generalizations on the blackboard, in separate columns. Constant reference is then made to the 'concrete' observations. All factual statements recorded are *specific* and *dated*. They are clearly and specifically differentiated on the board from the generalizations, i.e. higher order abstractions or inferences, interpretations, etc. The patients are encouraged and soon become interested in the 'game' of trying to find more than one 'explanation' for the facts recorded. They come to understand that they can 'think' more clearly when they are together with the physician than they do elsewhere. As improvement progresses, the 'natural' competitive urges and rivalry are stimulated and the patients themselves quickly 'catch' any unjustified inferences or abstractions verbalized by one or the other. They shortly come to understand that they are *not alone* in their difficulties. If they have made 'mistakes', so have others. Unreal and unrealizable 'ideals' become clearly recognizable, and are evaluated in a more adequate manner. There is a distinct lessening of 'guilt' reactions, and an increased 'tolerance' of themselves and others is built up with the increasing awareness of the fluctuating 'nature of things'.

Without being taught in so many words, they have become aware of some fundamental facts and principles taught in general semantics. They realize for example that, although there are *similarities* in the lives, purposes, and difficulties of all present, the existing *differences* or dissimilarities are of greater importance, and so differentiation is vital for adjustment. Once the therapeutic relation has reached this stage, a more individual type of therapy can be safely entered upon. One can then proceed, if necessary, to an investigation of the initial experiences underlying the persistent tendency to mis-evaluate current situations; or one can continue the treatment in any other direction as indicated.

V

In dealing with the *psychoneurotic*, I have utilized the finger-painting and group techniques described, with minor modifications. With these patients the problem is obviously not as complex, since the patient is in 'contact' with 'reality' from the beginning. It is true, however, that the 'defense-mechanisms' he has developed may have become so complicated that the resulting inefficiency and confusion resemble that seen in the psychotic. As I described previously, he usually comes for help at the time that his life has become overwhelmingly entangled by the process of erecting and maintaining numerous 'façades' for his 'protection'. Our problem then, is *first*, to understand

these 'mechanisms' and the 'purpose' they serve, and *second*, to establish a verbal 'rapport' in order to give the patient 'insight' into the 'devices' he is utilizing to delude himself. The final 'objective' of the therapy is to bring *unconscious tendencies* under *conscious control*.

One of the older methods of psychotherapy, commonly called 'authoritative,' has obvious deficiencies. The physician tends to disregard the problem of establishing a system of 'symbols' which the patient can 'accept'. Instead, he assumes the attitude of either a kindly or a malignant 'omniscient' authority. He utilized the 'panic' of the patient to impose certain rigid rules to guide him, regardless of the situation he encounters. He gives him a sort of verbal 'rosary' to employ whenever his feelings threaten to 'disorganize' him. This places the patient in a position of helpless dependence. He is like a frightened student who is given a certain number of 'rules' to follow in order to pass his examination. He feels safe as long as the teacher is there to help him, and as long as no 'malicious' professor changes the problem slightly. He never attains the feeling of 'knowing' what it is all about, and rarely becomes independent of some crutch or other.

The more recently developed and highly technical psychoanalytic technique brings about an effective 'rapport' on an 'emotional' basis. The relationship is known as the 'transference'. This is 'passively' acquired over a long period of time, and at great expense, by frequent contacts with the patient. In the course of many months the analyst comes to understand the behavior and verbalizations of his patient; and the latter slowly develops 'insight'—that is to say, he begins to comprehend and accept the 'interpretations' of the analyst. In addition to the time and expense involved in this method, highly complicated problems develop in the course of 'handling the transference relations'. These sometimes prove 'fatal' to the success of the analysis.

Both of these methods are useful if employed with careful consideration of the presenting problems and especially in the hands of experienced therapists. I have found, however, that the application of some of the simple principles set forth in general semantics can facilitate the use of either of these modes of therapy. I have arbitrarily divided my psychoneurotic cases into three groups according to the 'efficiency' and 'content' of their verbalizations: (1) patients having difficulty in expressing themselves; (2) patients who are 'over-verbalized'; (3) patients whose verbalizations concern their somatic complaints. At this point I wish to reiterate a previous statement: Patients tend to utilize language as a means to avoid facing certain 'realities' which they consider either unpleasant or dangerous.

In dealing with cases belonging to the group having difficulty in talking about their problems, I consider their reticence the result of 'excessive defense'. It is *as if* they believed they could avoid the problem by avoiding talking about it. In a case of this sort, I try to avoid creating further anxiety by not 'prying' into 'conflictual material', and begin by reassuring the patient that one of his chief difficulties lies in the fact that he had never been taught how to employ correctly language, the 'tool' with which we have to 'think'. Utilizing some current material which he can easily supply, and a large blackboard, I attempt to illustrate the manner in which 'confusion' can occur on the 'verbal levels'. As with the psychotics, the concrete, descriptive materials about the incidents are carefully separated from the abstractions or inferences, interpretations, etc. The purposes for making the specific 'abstractions' are stressed.

During the following interviews the patient is introduced to a group of simple picture-cards. He is first asked to describe only what he sees and record it as previously. Finally he is encouraged to give free rein to his imagination and evolve a story about each of the pictures. In one of my cases all this appeared to be unrelated to the problems for which the patient came to me, until one day. On this occasion he stated, 'I can understand just how this boy in the picture feels . . .' After this we were able to proceed more and more rapidly to a review of the specific problems he presented, and soon were able to dispense entirely with any devices for getting through his defenses. Automatically he came to understand that 'symbols' and 'things' should not be identified, and that there was no magic in 'not-talking'.

In handling psychoneurotics who are 'over-verbalized', I have found it helpful to eliminate conversation to the vanishing point by employing finger-painting. The patients are left strictly to themselves, with a few instructions to guide them, for several sessions lasting no longer than one hour. When allowed to speak during a period somewhat later, the patient is told to confine his remarks to his work. Again, by using the blackboard, the descriptive material is differentiated from higher order abstractions, interpretations, etc. Before long the patient 'projects' his difficulties into his work, and in this manner a more controlled 'verbal performance' is attained. As in the case of psychotics, these patients also find a good deal of relaxation during the period in which they are painting.

Those patients who have retreated into the refuge of 'conversion-symptoms' present a problem of 're-integration' resembling that encountered in the psychotics. Their 'elementalistic' language has provided a convenient 'dichotomy'. They are able to retreat 'logically' into a convenient array of 'physical' symptoms, and so avoid completely the underlying 'psycho-logical' difficulties. In dealing with these cases, I have been successful in employing the group-psychotherapeutic technique, as described. Finger-painting is also useful with these patients in that it involves a 'sensory' correlation with the 'projective' potentialities of the technique.

Once a patient can be made to understand the important part that language plays in the establishment and maintenance of his problems, and realizes that making correct symbol-to-fact relationships is the first step toward becoming adequately aware of both himself and his environment, almost any psychotherapeutic procedure can be more effectively utilized to further his complete independence.

Summary: This paper attempts to set forth the author's experience in utilizing his training in the principles, methods and techniques of general semantics in establishing a working basis (i.e. *rapport*) with a variety of psychiatric cases presenting themselves for treatment at the Psychiatric Institute, University of Illinois Medical School. A clear distinction is made between the 'psychotics' and the commoner types of 'psychoneurotics'. Considerable variability exists in the procedures and techniques to be employed and their relative effectiveness in these diverse clinical syndromes. The linguistically determined aspects of the problems for both patients and therapists are pointed out. Suggestions are offered in regard to the use of (1) finger-painting and (2) group psychotherapy procedures in the application of general semantics principles. Older methods are reviewed. Variations derived from general semantics are offered, which apparently enhance the adequacy of some methods now generally used in psychotherapy.

GENERAL SEMANTICS IN THE PRACTICE OF MEDICINE

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Application of psycho-logical knowledge in various forms to the practice of medicine has been in effect for centuries, while modern times have seen a marked increase in the use of psycho-logic techniques from various schools. Physicians more and more realize that an approach from the viewpoint of the individual-as-a-whole-in-an-environment is necessary if we hope to benefit human beings.

In a general way there are four factors involved in this 'whole': namely, nutritional, somatic, psycho-logical, and environmental components. If one wishes to put this in terms of an equation representing medicine in an elementalistic way we could use a, b, c, d , to symbolize the four factors and x the result which would be as follows: $a + b + c + d = x$. In this equation the individual factors are additive and separate implying only limited connections. If we were to speak of the four factors as factually related and inseparable, then we should use the equation $f(a, b, c, d) = x$. Thus the function of a, b, c, d , or $f(a, b, c, d)$, together produce the result x and thus there is only one functioning unit which would disintegrate if any factor were removed. It is in this relativity that we can picture the wholeness of the organism. General semantics through Korzybski has generously contributed toward an understanding of these relationships.

Since its applications to medicine are going on for only a few years, we must be cautious in drawing too early conclusions about methods of its use and results. Inasmuch as general semantics is partially a methodology of training the nervous system, we are all aware that many patients will need to invest much effort to improve the functioning of their nervous systems. The deep implications of the scientific value of general semantics are appreciated by most persons who spend some time in study and I am convinced they believe it is a most necessary science. Many persons who have not investigated linguistic matters will for the first time get the implications of language as pertaining to the nervous system and will develop an awareness of the neuro-linguistic issues in life as well as in medicine. In my observations of patients, I will say that the 'normal' individuals do this with less effort than 'neurotic' persons whose tendency is to more or less twist premises and science to their own distorted views of life. It appears that they make general semantics fit in with their general trends or patterns of life rather than consider it impersonally and try to benefit from its applications.

Another reaction which I have observed in 'neurotic' persons who first study general semantics is that of various degrees of psychosomatic upsets. The 'shock' may be quite beneficial to some individuals but unless the physician is trained and has time and understanding to carry the patient through his episodes, I believe the physician should carefully evaluate the given case before immediately directing him into general semantics. That is, it may be best to refer the patient to some psychotherapist and introduce general semantics to him after he has been made aware of some of his

psycho-logical mis-evaluations rather than give him the direct shock of general semantics first. From my own experiences I can say these episodes of disturbances can be a great source of trouble unless properly handled by a physician who himself is aware of the neuro-semantic issues involved in changing to a non-aristotelian orientation.

If a patient gets the notion that general semantics is a short route to a quick 'cure', the doctor may find himself in an undesirable situation. Such a situation occurred in my practice when I suggested to a patient that he might study general semantics, which he promptly did. A few days passed and he came into the office in a severely depressed state, saying that he could not get well as his cortex and thalamus were virtually disconnected and his process of abstracting was beyond repair. Inasmuch as he selected a psychotherapist who had no training in general semantics, I felt it part of my duty to relieve some of his tensions induced by the first shock of general semantics. For those who wish to know how this was handled, I will briefly describe. Knowing this man as I had for several years, I realized that he had thoroughly and efficiently accomplished his goal in life which was to increase his wealth. As far as I could tell he had abstracted well from his environment and his thalamo-cortical energy had been well co-ordinated with his goal of wealth. Granted his life plans I felt he had done far better than the average in achievement. I mentioned that it might be wise to consider changing his goals as this would produce less conflict when he discovered his mis-evaluations. I suggested he look at it from that viewpoint, and this had a quieting effect on his nervous system. He stated to me that after this explanation he did not have anxiety again over this matter. It appears to me that frequently 'neurotic' persons attempt to fit general semantics into their old systems of evaluation which produces no end of confusion for themselves and others.

Inasmuch as I am not a psychiatrist, no attempt will be made to evaluate general semantics as a method of psychotherapy. My applications are connected with mis-evaluations which are related to the general practice of medicine, beginning with the history of the case, its diagnosis, and treatment, including mis-evaluations that can frequently be corrected as they occur.

Language as a part of the neurological environment has been clearly brought to our attention in general semantics by Korzybski. The patient as one of many is surrounded by a more or less un-sane environment and as far as his scientific yardstick is concerned he is quite lacking in methods of proper evaluation. This is important in matters of 'cures', drugs, food, and general care of his organism. The radio, sign boards, daily papers, magazines, etc., all give him such diversity of opinion that any conclusion about any portion of it is strictly a game of chance. From general semantics he can soon learn the 'word is not the fact' and thus he can delay his reactions until he has investigated such statements, etc. I believe that most of us are acquainted with the somatic manifestations of *fear* which is widely responsible for the symptoms of many patients. These fear-manifestations develop in many cases from their inability to properly evaluate their neuro-linguistic environment. It is easy though hardly scientific to prescribe a soporific for the patient as a means of therapy. This may tend to unbalance his nervous system, from the higher centers on down through

the autonomic nervous system, including his biochemistries, only giving the patient more symptoms to take up his attention and does not offer any solution to his actual problems. I believe that frequently the conscious or unconscious premises on the part of the patient affect his reactions to similar medications. It is also interesting to note then that any changes in his systems of evaluations also may affect the reactions of the body to any external 'substance' such as drugs.

Since nutrition is of great importance it is interesting to observe the various evaluations. For example, certain foods may be selected on a basis of color, taste, appearance, aroma, advertising, without regard for more relevant scientific information. It probably follows that labels carry undue weight with some people and we act as if we eat the labels rather than the 'object' (physico-chemical process) since it was described in such glowing terms. Symbols in nutrition have come to play a great part through identifications such as whiteness with purity, certain foods for strength and body development and beauty and so on. Were the symbols used with correct-to-fact evaluation, there is little doubt that the predictability of health would be a more constant factor.

Korzybski has called particular attention to tensions and formulates some of the underlying mechanisms, giving a practical method for relaxation. In a general way tensions can be said to occur from mis-evaluations in life; that is, from a conflict between what one believes the world to be and what one actually finds in the world of fact-reality. Most patients are not aware of the existence of deep neuro-muscular tensions and once this is recognized it is an aid in helping them to understand that something needs to be done to bring about adjustment between themselves and the outside world.

The Korzybski technique of semantic relaxation can be taught to the average patient by repeated practice and the results are beneficial in improving the general well-being of the patient, his blood-pressure included. Once the patients have experienced these benefits, they make definite attempts to keep their tensions at a minimum.

Before concluding I should like to admit my semantic error—that of writing in terms of generalizations. From my standpoint, I do not feel that my own experience to date has been extensive enough for me to write a technical medical paper on this subject. I have attempted to register my generally favorable opinion and deep appreciation of Korzybski's work in general semantics; as professional observations accumulate, we can hope for more specific reports.

From my personal experience and practice I believe that a working knowledge of general semantics will be of advantage to the physician in helping him to understand the previously little understood factors behind many of the patient's mis-evaluations and will tend to promote a physician-patient rapport resulting in the individual's becoming better adjusted to himself and his environment.

In summarizing I should like to mention the interesting observation that if we analyze the reasons why a patient, or any person for that matter, fails to understand our interpretations, is unco-operative, etc., we find that most frequently the difficulty is on a 'semantic' basis, in which the improper use of neuro-linguistic mechanisms

plays an important part. The physician with training in general semantics soon recognizes an orientation which includes *all-ness*, 'false knowledge', and various false-to-fact creeds, etc.

In the treatment of many patients it is important to acquaint them with certain facts about their physiological processes, explaining perhaps that their organism is comparable to a kind of physico-chemical laboratory and that therefore the types of foods (physico-chemical processes) ingested should be evaluated adequately since these evaluations contribute to our well-being, or predictability concerning health, and our survival. Patients who have no knowledge of physiology, etc., naturally are impatient with long-term treatment, not understanding that their disorders occur mostly on the sub-microscopic levels.

Semantic difficulties are especially prevalent in medical practice, since many of our patients are of the chronic type who have nursed their illnesses for many months or years. Frequently their medical orientations are on a verbal level, evidenced by remarks such as 'I eat a well-balanced diet,' 'I eat meat,' 'I have been to the best physicians,' and other such statements based on definitions which they utilize to keep at a distance from the 'world of facts'.

In the organism-as-a-whole-in-an-environment approach we see the inseparable relationships among an individual's physical, nutritional, psycho-logical, etc., habits, any one of which if considered in isolation becomes merely an elementalistic fiction.

Patients with marked neuro-semantic maladjustments often may show little or no response to medical therapy unless these problems are taken into consideration and proper evaluation taught.

IMPLICATIONS AND APPLICATIONS OF GENERAL SEMANTICS IN THE PRACTICE OF MEDICINE

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The physician, it seems, has long occupied an 'un-sane' position in our society. By many patients he is regarded as a lesser god, able to work 'miracles'. To some disappointed individuals he is a 'racketeer', member of a large and powerful 'trust'. It may easily be seen how either of these evaluations might in many cases lead to strained relationships between doctors and patients.

Another source of confusion in the life of a physician stems from the many 'honors, privileges, rights', etc., (denied other members of society) which he is granted as a result of his superior training. 'He must pledge himself to avoid the sins of "selfishness", to shun unwarranted "publicity", "dishonest money-making", and "commercialism" . . .', etc.¹ The presence of so many multiordinal words in statements of this kind causes semantic blockages in the 'thinking', acting, living, etc., of the physician.

A method for recognizing and re-evaluating the problems of the physician in society would help him develop a saner approach to his patient. An improvement in the incidence of ethical 'morbidity' and 'mortality' could also be obtained by a clearing up of this confusion. Such a method may be found in Korzybski's general semantics.² After the physician has been trained and re-educated in this discipline, such blockages may be recognized and eliminated to the benefit of both himself and the patient.

A study of general semantics might also be helpful in solving another problem connected with the medical profession. Many physicians leave organized medical societies because they wish to practice 'high-grade' medicine. On the other hand many stay within the ranks of the societies to profit by the privileges that such membership brings. It is essential that we understand these individual variants on a factual basis. Both the medical societies and the physicians concerned would benefit.

The arbitrary method of dividing medical practice into specialties based on location of disease processes, name of disease, age of patient, equipment required to practice, etc., presents other serious problems. In the first place there is very often an overlapping of effort because of this arrangement. An individual specialist will treat patients 'belonging' to another 'specialty'. This overlapping is not only wasteful, but tends to create one form of distrust in professional relations. Could a little less specialization and more effort toward making the general practitioner able to treat the man-as-a-whole yield a sounder situation? Korzybski's notion that indefinitely many causes may operate where one seems most important is another powerful argument for de-

¹ Excerpt from fellowship pledge of American College of Surgeons (1941).

² General semantics, the *modus operandi* of the non-aristotelian system as formulated by Alfred Korzybski and expounded in his seminar lectures at the Institute of General Semantics. For explication of the leading terms and formulations of general semantics as used in this paper, see Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

veloping a better-trained general practitioner and not merely the specialist. Only when many of the factors of a patient's disease process, living, acting, 'feeling', 'thinking', etc., are known and compared, and the entire patient-situation examined, may adequate advice be given. There are (1941) however comparatively few opportunities for the general practitioner to take extended graduate instruction in medical schools.

Now let us consider another point. A blockage is induced in many members of the profession of medicine and many people outside of the profession by those two letters, *M.D.* Because of this blockage, the 'ideas', theories, facts, etc., suggested by extra-medical experts cannot be given adequate evaluation. Yet, each patient-situation requires the mobilization of many facts in various sciences before a diagnosis is available. Dr. W. J. Kerr, Professor of Medicine at the University of California, has recently employed some physicists in his laboratory to study heart action. This is evidence of a trend in the proper direction, toward non-elementalistic evaluations. Another example of the recent benefit from the interrelating of medicine and other scientific fields is shown in the development of the series of sulfa drugs. The qualities of the drugs needed as regards their absorbability by the body, their effect on particular organisms, their solubility, etc., were outlined by physicians. The manufacturing chemists have with rare skill been able to make drugs which produce most of the desired results. The physician sincerely needs the help of these and other experts. A study of general semantics with its emphasis on the organism-as-a-whole-in-an-environment and generalized methodology for such evaluations by more of the profession might speed the progress of medical science.

The orientations of general semantics can in many cases also throw light on actual problems involved in the diagnosis and treatment of patients. Standard training in medicine implies that a name can be applied to each patient-situation. To label a disease implies that we 'know' about it. But this is false-to-fact 'knowledge'. The name of a disease simply gives us a convenient method of classifying a series of cases and creates a certain amount of order in our observations along with other advantages. The label has little to do with the living patient-situation and it certainly is *not* the disease process going on in the organism of the patient.

Unless one guards against the false-to-fact implications in being able to name a disease he may actually understand less about his patient than if he were unable to 'pin' a label on him. For example, hypertrophic arthritis is the name given a process which is characterized by degeneration of the hyalin cartilage in the joint surface, a proliferation of osteophytes, and secondary degeneration of the surrounding tissues (capsule, tendons, periarticular tissues, etc.).³ This label transmits no information regarding the effect of such factors as trauma, thyroid dysfunction, body mechanics, dietary indiscretions, etc. Unless one remembers that he is treating a patient, Smith, (a unique living organism-in-an-environment) and not a 'disease' he may make serious errors. To be able to apply a label to a patient-situation engenders a certain complacency that could be beneficially eliminated.

The orientations of general semantics, I have found, are particularly useful for the physician when he is treating so-called neurotic patients. In the past the physician has

³ Bernard I. Comroe, *Arthritis* (First edition; Philadelphia: Lea and Febiger, 1940), p. 342.

tended to separate the 'purely physical' from the 'psychological'. A change of this notion benefits the physician *and* the patient. The patient with a condition which in standard medicine would be regarded as 'psychological' feels intuitively that something is wrong with him. He rejects the notion of 'nerves' causing his condition. It is often amazing and gratifying to see how quickly he seizes upon the notion of a 'real' factor being responsible, when for example the interrelationship between adrenalin and acetylcholine is explained. Often when he gets the slightest grasp of the function of the hypothalamus he begins to show improvement. The patient who has been 'rejected' by many physicians has at last found someone who 'understands' him. When the patient 'accepts' the notion of a physico-psycho-logical disturbance it is comparatively easy to search out his harmful identifications of himself with his notions of the 'insane', 'neurotic', 'abnormal', etc. As soon as the patient recognizes his error he is glad to shed a label that he has carefully guarded and cherished.

After sufficient 'rapport' has been established, the structural differential can be brought into use.⁴ It maintains and increases the benefits already gained by the patient. It likewise aids in explaining animalistic signal-reactions and dichotomous terms. An explanation as to how men 'copy' animals in the use of their nervous systems frequently helps the patient in his re-orientation. Primitive emergencies demanded mobilization of muscular energies. In the emergencies of 'mental' work or 'civilized' social contacts the organism may derive no benefit from this primitive mobilization. If we can teach the patient to meet his emergencies in a semantically relaxed manner, without mobilization of muscular tension, the reaction in a given situation will be more 'intelligent' or more adequate. The patient is also helped by an explanation of the fallacy of dichotomies. When he can be trained to judge each situation on the basis of the extensional 'facts' of that particular happening at that date, much tension, irritability, 'un-sanity', etc., tend to disappear. Obviously the physician can use general semantics to do a great deal toward helping his patient. I feel that many of the patient-conditions that the physician treats could also be *prevented*. The work of the physician with the already 'affected' individual could be supplemented and the results improved.

Group instruction in general semantics would, of course, yield more results in less time. An individual would be more likely to continue his interest and so recurrences of his particular condition would be prevented. The individual affected is frequently 'asocial' because of his identifications. In group instruction he finds himself a member of a group with similar interests, 'ideas', 'thoughts', etc., even similar blockages and identifications. The group technique would prevent his feeling of 'queerness' as an individual, and he would tend to become 'social'. Discussions among the group outside of the classroom would aid the process of re-canalization. When a physician or teacher could not arouse the interest of a particular person in general semantics some other member of the group might be able to do so. In this way some failures could be prevented. Many other reasons for group instruction could be offered.

In conclusion I believe that a study of general semantics by physicians would im-

⁴The structural differential is a three-dimensional diagram which represents the process and levels of abstracting, used for training in consciousness of abstracting, non-identity, etc. See *Science and Sanity*, *op. cit.*, Ch. xxv.

prove inter-professional relations, would forestall some individual professional problems, would encourage additional use of extra-medical facts, would help the physician in dealing with the patient's problems as a whole, etc. General semantics should be made a subject for study in our school system. It would serve as preventive medicine, much as inoculations do on the somatic levels. Group instruction would also be beneficial for adults in conjunction with the physician's efforts for rehabilitation.

USE OF GENERAL SEMANTICS TECHNIQUES IN PHYSIOTHERAPY*

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We are concerned in this paper with the question: 'Can general semantics techniques be applied in the field of physiotherapy?'

The problem is not so simple as it may appear at first glance, for physiotherapy is essentially a prescription and the technician is not free to initiate therapy that might be considered to belong in the province of the psychiatrist or the mental hygiene social worker. The doctor orders heat, massage, corrective exercises, etc., but he would look elsewhere for other than physical measures.

In spite of the limitation this imposes, the physiotherapist is in a unique position. There will usually be a prolonged treatment period in which there is opportunity to know the patient as an individual, and to become aware of problems sometimes overlooked in the search for the 'disease' and its remedy. The skillful therapist can do much to speed recovery by the proper handling of these problems as they appear.

For the last year and a half an attempt has been made to utilize general semantics in the Physiotherapy Department of a city clinic, where the age range of patients covers the span from infancy to advanced years. Patients referred to this clinic have post-accident or post-operative disabilities, or chronic conditions, including the so-called 'crippled'. They may have muscle weakness or spasticity, contractures, adhesions, loss of 'normal' circulation, etc., but these conditions are by no means all that confront the technician. There is the further problem of the patient's evaluation (or mis-evaluation) of his illness.

It is my opinion that one of the greatest causes of suffering in these cases is not the amount of pain or the actual physical disability, but the feelings of 'loss', usually exaggerated out of all proportion to the facts. When confronted with accident or illness, few escape the fear of permanent incapacity. The sick or crippled man has 'lost his hold' and he seeks comfort or escape. Often he is thrown into a panic which results in aggravating his condition.

I need not point out to students of general semantics the mechanisms involved here. They are extremely common and consist of mis-evaluations based on identifying a seen and felt 'fact', the injured part, with judgments or preconceived notions of 'crippled', 'disease', 'death'—words that evoke 'emotional' reactions of the greatest intensity.

* Techniques as learned by the writer from Alfred Korzybski in a seminar at the Institute of General Semantics. The general principles, methods and devices are formulated by him in *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941). For a clinical description of semantic relaxation as a technique see Wendell Johnson, *Language and Speech Hygiene: An Application of General Semantics*, General Semantics Monographs, No. 1 (Chicago: Institute of General Semantics, 1939), Ch. VII.

If the physiotherapist is treating the *individual*, rather than letting the diathermy machine do the work, the tremendous importance of these questions is a daily concern. Sometimes recovery starts only when by some chance, a mis-evaluation is cleared up. A knowledge of general semantics enables the physiotherapist to proceed with a far greater margin of success. Whether or not the *principles* of general semantics are taught to such patients, depends upon the physician in charge and the needs of the particular case; but nothing except the lack of knowledge of general semantics prevents the technician's *own use* of the techniques in handling such problems.

It is tremendously helpful to *date* the disability, thus eliminating the threat of permanency; or when complete recovery can never be expected, it helps to extensionalize the fears. In this way 'emotional' tension is relieved and the patient is free to face his difficulties with a minimum of strain.

The physiotherapist might proceed something like this:

This elbow is different from your elbow of January first, before the accident. I should say it is around 40 percent efficient today, but it is, even at this moment, slowly and surely changing and improving. The missing 60 percent must be supplied by this right arm, for a time. Your task is to equalize these percentages as much as possible. We are going to increase this 40 percent to as high a figure as we can.

This statement oversimplifies the problem, of course, but it does serve to high-light an important consideration.

There are always patients who come to the clinic who do not respond to suggestions or encouragement. It would be a worth-while and interesting experiment to give training in general semantics to such a group. Up to the present time no experiment of this kind has been made. In a few cases, however, with the physician's permission, the principles of general semantics have been taught to individuals during the regular treatment period.

To cite an example, we take the case of Mary M. Miss M. was a spinster, forty years old, who lived in a rented room provided by the Welfare Department. Her social contacts were few, and she was faced with continual discouragement in seeking employment. Miss M. had a spastic arm which became a symbol to her of all her difficulties. After a year's treatment in the physiotherapy clinic, she requested an operation, which was performed, although it was of such a nature that the only result expected was a slight gain in function. The patient had been despondent and suicidal before operation and she had a trying hospital experience. Unfortunately she was one of the few patients with this type of operation who have residual pain, and because of her pain she believed herself worse off than before the operation.

When Miss M. came in again for physiotherapy, she was in a highly 'emotional' state. She threatened to 'get' the surgeon. The social worker, visiting nurse, and physiotherapist attempted to reassure her, to no avail. She was referred to a psychiatrist but refused to go. In the meantime the usual physiotherapy after-care, relaxation and training for her spastic condition, was impossible to perform. The only alternative to discharging her was to try something different.

The technician secured the doctor's permission to try semantic relaxation and some

training in general semantics. The patient was then told that the doctor had ordered a new type of treatment but that she must agree to co-operate if she were to receive its benefits. The physiotherapist spent one hour explaining to Miss M. by examples the process of abstracting and the use of indexing and dating. She was shown how by using these devices and delaying her reactions, she could protect herself from undue 'mental' strain and properly evaluate her condition. She was then taught semantic relaxation of the whole body. The extreme rigidity of her spastic right arm was relieved to a considerable extent although the pain was not entirely eliminated. When she returned for her next treatment, the antagonism was gone and she was hopeful of relief, whereas previously her 'mind' was definitely closed to all such suggestions. At each treatment period some time was reserved for further training in the new methods. Miss M. became increasingly co-operative and in a short time it was possible to persuade her to go to the psychiatrist.

As a joint project this case is also interesting. The social worker secured Miss M. a position as soon as her returning strength permitted. The psychiatrist referred her to the psychopathic hospital for hydrotherapy for a few weeks. Training in general semantics was discontinued after the patient visited the psychiatrist, so no claim is made in this case that the instruction brought about any re-orientation of a far-reaching nature. It did solve her immediate problem, however, and we may assume that what she gained was of permanent value. She has since stated to the physiotherapist that she believes the training she received in general semantics was of great benefit to her. The patient now appears to be happy and on the way to a satisfactory solution of her problems.

Relaxation therapy has long been a modality used in physiotherapy practice. The method of Jacobson is probably most commonly used—a method of training by individual muscle contraction, verbal explanation, and progressively 'letting go' in the muscle by autosuggestion. Other methods involving suggestion and soothing massage are in use in some places.

The physician in charge gave his approval to teaching semantic relaxation to fifteen patients as an exploratory procedure. From our experience, we would say it is an advance over any other single method of relaxation therapy for spastic patients known to the physiotherapist at the present time. The spastic patient often cannot contract and relax a muscle 'at will' and it is sometimes difficult for him to experience the sensation of relaxation as it is necessary for him to do when he is instructed by the Jacobson method, for example.

In the semantic method as adapted for use with these cases, the patient sits on the edge of a chair, if possible. If not, he reclines on the bed with pillows under the head and knees. The instructor takes the patient's hand and shows him the difference in the 'feel' of spastic and non-spastic muscle. He is encouraged to feel a 'handful' of muscle, not just a skin sensation, to feel it 'down to the bone'. Then the instructor slowly and gently takes a firm hold of the spastic muscle, pulls it away from the bone and moves it back and forth, gently shaking it, sometimes shaking the whole arm gently or saying, 'let it go, let it rest,' until some degree of relaxation is secured. The instructor then quickly takes the patient's hand and lets him feel the change in the state of the

muscle, which now feels more soft. He is usually highly pleased at the discovery. It is necessary to avoid the return of tension before the completion of this demonstration. Now the instructor can demonstrate on a non-spastic muscle what a much greater degree of relaxation feels like. This is done by the same method. The non-spastic muscle is moved slowly back and forth until it becomes 'cottony' and soft. The patient 'feels' this with his hand. He is taught to relax his arms, legs, face, shoulders, back, etc., by this method, giving especial attention to the spastic muscles. In some cases it is not possible for the patient to practice manipulation by himself. Such severe cases are the exception. Usually, there is enough function in at least one hand to make this self-practice possible.

It has been found that the semantic method has speeded up the process of teaching relaxation. It has given the patient a readily determined goal by which to gauge his progress, i.e. the feel of the muscle with his own hand. Further results are gained by this method through the relaxing effects of such manipulation, which in the majority of cases the patient can do unaided. Without exception every patient previously treated by other methods has stated that he felt semantic relaxation to be easier to learn and more effective.

It will be seen from this paper that no thoroughgoing teaching of the remedial techniques of general semantics has been attempted, except in the work with semantic relaxation on spastic patients. Its usefulness in that field has been demonstrated. In addition, the general principles have been shown to be of value in teaching, in handling clinical problems, and assisting patients with their difficulties. It is to be hoped that more extensive application will be possible in the future.

PART I—*Continued*

Neuro-Semantic and Neuro-Linguistic Factors in Medical Science
and Practice, Neuropsychiatry, and Related Specialties

Section B

THE PROBLEM OF STUTTERING FROM THE POINT OF VIEW OF GENERAL SEMANTICS

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Practically any investigation of stuttering might be regarded from the point of view of general semantics. For the purposes of this paper, a few selected studies will be considered, and the discussion of them will be limited to certain issues. First, we shall consider the problem of diagnosis as it is related to extensional agreement in the use of the word *stuttering*. Second, we shall examine the practical consequences of this problem, particularly from the point of view of the stutterer himself, especially as extensional disagreement contributes to the development and aggravation of stuttering in specific cases.

Insofar as general semantics may be regarded as constituting a systematic approach to the problems centering around word-fact relating, it immediately suggests various general types of research. It suggests certainly that one of the most basic issues in connection with the study of any disorder, any type of 'normal' or 'abnormal' behavior, is that concerned with the degree of extensional agreement involved in the use of the key terms employed in statements made about the behavior. This is a surprisingly complicated matter, and perhaps the best way to deal with it in a short paper is that of simply presenting some relevant data and discussing a few of their more apparent implications.

As Curtis Tuthill reported to the Denver Congress, his investigation of extensional agreement, in applying the word *stuttering* to speech phenomena, showed serious degrees of disagreement, even among so-called experts, as to what specific phenomena are to be labelled as *stutterings*. Tuthill has discussed some of the implications of this finding,¹ and in the present paper we shall elaborate and emphasize certain of these implications.

The extensional agreement indexes (EAI's) computed by Tuthill were all close to .37 or .38. Thus, the number of agreements shown by Tuthill's subjects, whether 'experts', laymen, or stutterers themselves, in relating the term *stuttering* to actual speech phenomena, was approximately 38 percent of the number that would have constituted perfect agreement. In an absolute sense, this amounts to a rather grave degree of disagreement. Roughly, it indicates that the term *stuttering* is sufficiently vague to be applied to widely differing phenomena. When this is combined with the findings of Dorothy Davis Tuthill, the conclusion is reasonably clear that it would be quite possible for the speech of practically all children to be labelled by some parents and teachers as *stuttering speech*. As she has reported to this Congress, she found that all of the sixty-two children (ages roughly two to five years) whom she observed, ex-

¹ Curtis Tuthill, 'A Quantitative Study of Extensional Agreement with Special Reference to "Stuttering",' in this volume.

hibited some form of speech repetition, the average child speaking in such a way that one out of every four words figured in some type of repetition.²

When these two sets of findings are combined with those from a third study, the implications become still more clear and significant. In this third study, the present writer, with the assistance and collaboration of several other workers, investigated forty-six young, 'recently diagnosed' stuttering children, and compared them with an equal number of non-stuttering children (not diagnosed as 'stutterers' by anyone) matched with them for sex, chronological age, and I.Q. The forty-six stuttering children were practically all diagnosed originally by their parents or teachers—that is, by *untrained laymen*.³

Now, what these untrained laymen had diagnosed originally as *stuttering* appeared to be essentially indistinguishable from what Dorothy Davis Tuthill had found to be characteristic of young children generally—and Curtis Tuthill had shown that the chances for extensional disagreement in applying the word *stuttering* to phenomena of that general variety were very great. Thus, one parent might very well label as *stuttering* what another parent would label *normal speech*. In view of the relatively low extensional agreement index of *stuttering*, as found by Curtis Tuthill, and in view of the striking similarity between the speech of the young 'stutterers' (when *first* diagnosed as such) and that of the young 'non-stutterers', any elaborate biological or neuro-physiological or organic 'explanations' of the onset of 'stuttering' would appear rather gratuitous. It would be quite as if being named Henry were to be regarded as a disease, for which complicated explanations were sought in terms of chromosomes, high fevers, or changes of handedness.

In a word, the results of these investigations serve to prompt a re-examination of the old question, 'What causes stuttering?' The question now becomes 'What causes a child's parents and teachers to call him a "stutterer"?' and 'What effect does the diagnosis of stuttering tend to have on the subsequent speech behavior of the child?' The low extensional agreement index of the word *stuttering* is a significant part of the answer to the first of these two questions. Other parts of the answer to it are to be sought in two other directions: (a) in the conditions conducive to non-fluency (not stuttering) in children, non-fluency, which, when conspicuously frequent or exaggerated, might be more likely to be labelled *stuttering*; and (b) in the factors which tend to make parents or teachers apply the label *stuttering* in any given instance to non-fluency, regardless of its degree of conspicuousness.

The above mentioned studies of Dorothy Davis Tuthill and of the present writer, together with another investigation by Eglund,⁴ have provided a partial answer to the conditions that are conducive to non-fluency. Among such conditions the following are to be mentioned particularly: (a) vocabulary inadequate to the demands of the situation, as manifested in the speech behavior of a child who is 'talking over his head'; (b) speech competition, as when a child attempts to speak in a situation where older

² Dorothy Davis Tuthill, 'An Investigative Approach to the Problem of Onset of Stuttering,' in this volume.

³ Wendell Johnson, 'The Onset and Early Development of Stuttering,' *Journal of Speech Disorders*, in press.

⁴ George Eglund, 'An Analysis of Repetitions, Prolongations, and Allied Interruptive Reactions in the Speech of Young Children.' Unpublished Master's thesis, University of Iowa, 1938.

children and adults tend strongly to 'out-talk' him, and to give inadequate attention to his speech attempts; (c) negative self-evaluations, such as 'shame', 'sense of guilt', etc., occasioned by parental scolding, rebuff, or disapproval—particularly insofar as these involve negative evaluations by the child of his own speaking rights or ability; (d) 'language spurts'—i.e. the transition from the speaking of single words to the speaking of short sentences, or from the speaking of simple sentences to the speaking of complex sentences, etc., tends to occasion non-fluency which appears to decrease as the new features of language structure are mastered.

While these are among the more important factors conducive to non-fluency, they do not comprise an exhaustive list by any means. The point in mentioning them lies in the fact that the more non-fluently a child speaks, the more likely, perhaps, is he to be regarded as a 'stutterer'. It is to be stressed, however, that we have encountered many cases in which very slight—and certainly entirely normal statistically—degrees of non-fluency had been diagnosed by parents or teachers as *stuttering*.

As to the factors that tend to prompt parents or teachers to label a child as a *stutterer*, aside from his degree of non-fluency, no systematic research has been done. General clinical experience, however, provides a few fairly clear leads. On one occasion a father proceeded to diagnose his three-year-old son as a *stutterer* after hearing a lecture on stuttering (examination revealed the boy's speech to be well within the normal range of fluency). In general, parents who have a more or less superficial knowledge of 'age norms' with regard to various aspects of child development, and who are 'ambitious' for their children, seem more prone to regard any manifestations of non-fluency as 'abnormal'. There seems to be a tendency for the parents who regard their children as *stutterers* to have rather high standards generally, and to evaluate their children as being, also, 'unmannerly', or 'nervous', or 'awkward', etc. In brief, they appear to expect too much of their children, not only in speech development, but also in most other phases of behavior.

One other factor in this connection deserves special mention. A number of studies have been done on the tendency of stuttering to 'run in families'. There appears to be such a tendency to some degree. The investigators have almost uniformly offered but one interpretation of this: 'heredity'. 'Heredity' is here put in quotation marks for two reasons. The first is that none of the investigators has ventured to explain in any sort of detail just what might be inherited or how—and it is to be pointed out that there is, perhaps, many a slip 'twixt the gene and the lip. The second reason for the quotes around 'heredity' is that what these investigators call 'heredity' appears, on the basis of one study⁵ and of considerable clinical observation, to be something quite different. In families in which someone has been a 'stutterer', there appears very often to be a generally heightened sensitivity to non-fluency. In such families, parents seem, in the writer's opinion at least, to be a bit more prone than do parents in other families to notice the non-fluency of their children and to be concerned about it. In view of this, and in consideration of the following discussion, it would seem that 'stuttering' is 'inherited' in the same sense in which the Catholic faith or eating with the fork is 'inherited'. What appears to be the case is simply that 'stuttering' runs in families, insofar as it does, only in the sense that a tendency to regard childish non-fluency as

⁵ Marcella Gray, 'The "X" Family: A Clinical and Laboratory Study of a "Stuttering" Family,' *Journal of Speech Disorders*, V (1940), 343-348.

stuttering, a 'diagnostic habit', is passed along from father—and especially mother—to son.

The question remains as to what difference it makes whether or not a child's 'normal' or 'natural' non-fluency is diagnosed as *stuttering*. The above mentioned study of the onset of 'stuttering', involving forty-six 'non-stuttering' children, indicated very definitely that for the most part and in the great majority of cases stuttering, in any serious clinical sense of the term, develops after it has been diagnosed. In this respect, stuttering is not at all like the measles or whooping cough, for example. In the case of stuttering, the diagnosis itself appears to be one of the chief, if not the clearly outstanding, cause of the disorder. It is in consideration of this fact that the present writer has termed stuttering a *diagnosogenic* disorder.⁶

That is to say, a child may exhibit even extreme degrees of *non-fluency*, but until he begins to evaluate it negatively and to react to it avoidantly, it remains to all appearances for all practical purposes essentially unconscious, effortless, and of no particular consequence. Unless the child does learn to react to it avoidantly it tends strongly to decrease with increasing age and general development. It becomes stuttering, in any significant sense of the term, when it is called *stuttering*. That statement, of course, is *not to be taken too literally*. The parent does not have to use the word *stuttering*, does not have to tell the child he is a 'stutterer', does not, in fact, have to *tell* the child anything. The mother or father can do as much by looking at him—with a certain facial expression. In very rare cases it may be that the parent does not even have to do that—nor does anyone else—provided the child, due to unusual conditions, becomes so non-fluent, or so sensitive to his non-fluency, even though it may not be extreme, that he over-evaluates it, resents it, learns to fear it, etc. That could happen; perhaps it does sometimes. It is certainly the rule, however, that someone else, usually the parent, regards the child's speech as 'defective' before, and often long before, the child becomes aware of his speech as constituting a problem. He is taught an evaluation by his parents—or, rather, he 'catches' it from them.

The significance of a diagnosis lies in its effects on those who make it (whether or not they actually use the word *stuttering*, either overtly or covertly, in making the diagnosis). Having decided her child is 'stuttering', or having 'difficulty', etc., a mother is rather more than likely to do a number of things. Some parents, of course, do nothing; convinced that it as a 'stage through which all children pass', or that 'he will outgrow it,' they promptly forget about it. This is extremely fortunate for the child. Other parents, however, are blessed with no such unextremely wisdom. They play an amazing semantic trick on themselves. Having *called* the child a 'stutterer' (or the equivalent), they react less and less to the child and more and more to what they have *called* him. In spite of quite overwhelming evidence to the contrary, they assume that the child either cannot speak or has not learned. So they proceed to 'help' him speak. They stop him and start him over. They tell him to go more slowly. They urge him to take a deep breath, to 'think what he is going to say' before trying to say it, to use more 'will power', to 'just relax', to say it 'like this', to say it 'like that', to 'say it after me,' and not to 'stutter that way!'

⁶ Wendell Johnson, *Language and Speech Hygiene: An Application of General Semantics*, General Semantics Monographs, No. 1 (Chicago: Institute of General Semantics, 1939), p. 38.

And when, 'in spite of all their help' he 'stutters worse than ever,' they worry more and more, and convey their steadily increasing concern and fear to the child, who, in due time, tends to act as if he had been quite convinced that speaking was an extraordinarily difficult feat, fraught with risks and catastrophes, to be attempted gingerly, if at all, with great effort and foreboding. The 'deep breaths' he has been urged to take become frantic gaspings, the 'will power' becomes a series of facial grimaces and bodily contortions, and the 'stopping and starting over' becomes more stopping and less starting over. These things are frightening and disheartening to a child, and so a vicious spiral of evaluations of evaluations and reactions to reactions is set going. In this way what had been nothing but the random hesitations and repetitions of a normal youngster become transformed into something that we may well call stuttering, without quotation marks. And stuttering, without quotation marks, can be an extremely serious disorder.

This, then, is an abstract of what the present writer wishes to convey when he refers to stuttering as a semantogenic disorder of a diagnosogenic type.⁷ And that leads to the last point to be touched upon in this paper. There has been and still is a great deal of controversy among speech pathologists as to the most probable cause of stuttering. In general there are two 'schools of thought', each with its many divisions. The one school contends that there are stutters. The other contends that there is stuttering. That is to say, the former contends that stutters are people who are predisposed to stuttering—they have a special kind of nervous system, or metabolic mechanism, or set of glands, or 'just a predisposition'. In other words, they stutter because they are stutters. The other school contends that there is something called *stuttering*, and that while possibly some individuals might acquire it more readily than others, it is a kind of behavior that *might* be acquired by almost anyone. It is *learned* behavior. The reasons for learning it vary from one theorist to another, however, just as the definition of the above mentioned 'predisposition' varies from one theorist to another. But no one outside of general semantics has ever suggested that *the diagnosis* of stuttering was a cause of it, probably because no one outside of general semantics has appeared to realize the degree to which two persons talking about 'stuttering' could be at variance in what they were talking about, and could be influencing what they were talking about. The uncertainty principle which expresses the effect of the observer on what he observes can be extended to include the effect of the speaker on what he names. What Quine has called the 'uncritical assumption of mutual understanding' has served to maintain controversy and obfuscation among those of us who have sought to understand stuttering, just as it has in so many other fields.

Study of Korzybski's general semantics suggested the notion of the extensional agreement index as a tool for the study of word-fact relating. Diagnosis turns out to be a type of word-fact relating. The studies abstracted and interpreted in this paper suggest that whenever diagnosis involves a low degree of extensional agreement, the possibility of the diagnosis causing what it names presents itself because of what it frequently names—and for the obvious reason that diagnoses have consequences. A rose by any other name does not smell the same—especially if that name is *stuttering*, or *delinquency*, or *neurotic*, or *stupid*. From this point of view a great deal of important research in psychiatry and education is indicated.

⁷ *Ibid.*

AN ANALYSIS OF CERTAIN DATA CONCERNING LOCI OF 'STUTTERINGS' FROM THE VIEWPOINT OF GENERAL SEMANTICS

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One of the most perplexing of the less extreme deviations from the 'normal' in human behavior is the group of phenomena labelled *stuttering*. Certainly there are few deviations more strikingly dramatic than the more or less frequent blocks, repetitions, grimaces, and other abnormalities in the speech of persons who are apparently in every other respect quite 'normal' as far as the ordinary observer is able to determine.

The first gropings toward an understanding of the problem of stuttering are lost in antiquity. Aristotle had quite definite opinions as to the cause of stuttering, and his pronouncements are available in his writings. Since the time of Aristotle there have been literally hundreds of theories of stuttering, propounded by physicians, theologians, anthropologists, psychiatrists, sociologists, psychologists, etc., not to mention a multitude of persons who had no claim to specialized knowledge in any field.

One of the most baffling aspects of the problem of stuttering is its intermittent character. So far as the author is aware, the literature records no case in which a person stuttered on every word he attempted to utter. It seems a safe generalization, then, that in the speech of every stutterer there are fluent intervals of varying duration. As Wendell Johnson has pointed out, any theory of stuttering, to be a satisfactory one, must account for these fluent intervals as well as the non-fluent periods, or 'spasms'.¹ Unfortunately, very few theories of stuttering take any cognizance of the periods of fluency in the speech of the stutterer, and the theorists seem generally to ignore the necessity of explaining them.

In the light of present knowledge of stuttering (though perhaps 'lack of knowledge' would be a better term), it would appear impossible to formulate any hypothesis capable of explaining satisfactorily 'all' the phenomena of stuttering, including the existence of successive moments of fluency and of non-fluency. Certainly no such ambitious attempt is made in the present paper. Rather it is proposed to discuss certain experimentally-determined quantitative data regarding factors which seem to be related to the loci of stuttering spasms, or moments of non-fluency.

It is necessary first to describe the data, which were collected at the University of Iowa Speech Clinic during the academic year 1934-35.² Each of thirty-two stutterers read aloud approximately ten thousand words of reading material to the experimenter, who recorded on a mimeographed copy of the selection being read, the stutterings,

¹ Wendell Johnson, 'The Role of Evaluation in Stuttering Behavior,' *Journal of Speech Disorders*, III (1938), 85-89.

² See works referred to it in succeeding footnotes, also Spencer F. Brown, 'The Theoretical Importance of Certain Factors Influencing the Incidence of Stuttering,' *Journal of Speech Disorders*, III (1938), 223-230.

reading errors, etc. The experimenter's reliability was represented by a coefficient of correlation of .99 between his observations of frequency of stuttering on specific sounds in phonographically recorded speech and the frequency as determined independently of his observations. The data were subjected to statistical analyses in an effort to determine the influence of several factors which might conceivably affect the loci of stutters in the speech sequence.

Detailed examination of the results of the statistical procedures used is extremely interesting, but for our present purposes only the salient ones need be described. The first analysis considered stuttering in relation to the various speech sounds.³ It showed that some sounds occasion more difficulty for stutters than others. Although the rank of difficulty of speech sounds for any given individual might differ considerably from that for another subject, a general group tendency was clearly evident. For instance, consonants were markedly more difficult than vowels, although every subject stuttered to some extent on vowels, and two subjects stuttered more on vowels than on consonants. This variation in the amounts of stuttering which the various sounds occasioned may be termed the *phonetic factor* of difficulty for stutters.

A verification of the existence of a *phonetic factor* of difficulty was provided by the use of another type of reading test, which contained simple words arranged in haphazard order without connected meaning.⁴ Only fourteen of the thirty-two cases stuttered as many as one percent of the words in this test. For these fourteen subjects it was again possible to arrange the sounds in a rank of difficulty, though in no case was the rank the same as that obtained from the reading of contextual material. The group ranking of the sounds remained much more stable, indicating the existence of the phonetic factor of difficulty. The individual variations indicated, however, that other than phonetic factors were influencing the loci of stutters.

One of the more obvious of these other factors is the grammatical function of the various words.⁵ Statistical study showed that a grammatical rank of difficulty exists. This was found to be much more stable than the phonetic factor. There was less variation from subject to subject, and each individual was more consistent in his performance from one time to another. It was shown that the phonetic and the grammatical factors, though interrelated to some extent, exist independently of each other and of other factors yet to be described. The grammatical factor of difficulty may be described as follows: Adjectives are most difficult for stutters, nouns are next most difficult, followed in order by adverbs, verbs, pronouns, conjunctions, prepositions, and articles, which are least frequently stuttered. It will be noticed that those parts of speech which include the words that may be assumed to be the most crucial to sentence 'meaning' were more difficult than those parts of speech relatively unimportant to 'meaning'. This point may be clarified to some degree, perhaps, by reference to the fact that adjectives, nouns, adverbs, and verbs are the type of words most likely to be used in telegrams from which unnecessary words are deleted.

³ Wendell Johnson and Spencer F. Brown, 'Stuttering with Relation to Various Speech Sounds,' *Quarterly Journal of Speech*, XXI (1935), 481-496.

⁴ Spencer F. Brown, 'A Further Study of Stuttering in Relation to Various Speech Sounds,' *Quarterly Journal of Speech*, XXIV (1938), 390-397.

⁵ Spencer F. Brown, 'The Influence of Grammatical Function on the Incidence of Stuttering,' *Journal of Speech Disorders*, II (1937), 207-215.

Stutterers often say that they have difficulty in getting started, and to test this statement another group of statistical analyses was made.⁶ It was found that the first words of sentences and paragraphs are markedly more difficult for stutterers than the rest of the words. The difficulty experienced in relation to the second and third words of sentences and paragraphs is also noticeably greater than the average difficulty of all other words taken together. First words were most difficult and third words were least difficult of the three groups of words studied. Thus, a factor of *word position* was demonstrated.

Yet another analysis was made, this time concerning the relation of stuttering to accented syllables.⁷ Here it was demonstrated that stuttering is far more likely to occur on accented than on unaccented syllables.

One should not draw the inference that these phonetic, grammatical, positional, and accent factors are the only ones operating to determine the loci of stuttering. They are the most obvious ones, and further investigations are now being carried out to try to discover whether other such factors exist. The factors which have already been isolated, however, furnish valuable clues to certain neuro-semantic mechanisms involved in stuttering.

It should be noted that in the discussion of these neuro-semantic mechanisms it is not necessary to assume the validity of any theory as to the 'original cause' of stuttering. Whatever may be regarded as being the reasons for the onset of stuttering in the first place, it would appear fantastic to assume that the 'original cause' continues to operate intermittently and momentarily to produce every individual moment of stuttering and then ceases operation entirely during the fluent intervals. Advocates of various theories of stuttering which posit some more or less permanent difference between the 'stutterer' and the 'normal speaker'—whether the difference be assumed to be in neurological gradients, blood chemistry, muscular or nervous irritability, or some other—all these theorists seem willing to admit that individual moments of stuttering may be related to conditions of 'fear', 'tension', or other psycho-logical or neurological functioning. Evidence for this notion may be found in the introspections of stutterers, who often report that they fear certain words, that they tend to stutter more frequently on words which they fear, that they tend to stutter more when they are 'nervous' or 'excited', and that they stutter relatively infrequently on words which they do not fear. A quantitative study by Steer and Johnson⁸ indicates that the amount of stuttering varies directly with the fear of stuttering and degree of 'unwillingness' or reluctance to stutter. The data cited in the present paper indicate to what points in the speech sequence these evaluations may be related.

The available evidence, therefore, from introspections and from experimental studies, seems to show that during the process of speaking the stutterer is constantly evaluating his degree of fluency, his probable degree of fluency in relation to the words he is about to utter, the social and other consequences of non-fluency, etc. The evalu-

⁶ Spencer F. Brown, 'Stuttering with Relation to Word Accent and Word Position,' *Journal of Abnormal and Social Psychology*, XXXIII (1938), 112-120.

⁷ *Ibid.*

⁸ M. D. Steer and Wendell Johnson, 'An Objective Study of the Relationship between Psychological Factors and the Severity of Stuttering,' *The Journal of Abnormal and Social Psychology*, XXXI (1936), 36-46.

ations relating to fluency or to any degree of non-fluency may be roughly grouped into two categories—positive evaluations and negative evaluations. In the positive class might be placed those evaluations inadequately described in terms of 'confidence', 'willingness to stutter', 'poise', 'freedom from strain', etc. At those points in the speech sequence in relation to which these evaluations are made there is usually a high degree of fluency. In the negative group are the evaluations described vaguely in terms of 'tension', 'fear', 'unwillingness to stutter', 'uncertainty', etc. Those points in the speech sequence in relation to which these evaluations occur are usually characterized by non-fluency, or stuttering.

It would seem, then, that in stuttering we have an almost unparalleled instance of covert evaluation resulting in changes in overt behavior from moment to moment.

Perhaps a more accurate statement of the matter is that the stutters which are readily observable changes in overt behavior, are but one aspect of the process of organismal evaluation. It may be that we are dealing here with a mechanism which is not restricted to stuttering but is far more general. The question is an interesting one, but is outside the scope of the present paper.

As has been stated, stuttering occurs with significantly greater frequency with relation to certain points in the speech sequence—specific sounds, accented syllables, certain parts of speech, and the first few words of sentences. It has also been suggested that stuttering may be regarded as the observable aspect of a negative organismal evaluation. The problem remains of explaining why these negative evaluations occur more frequently with relation to these definite points in the speech sequence rather than other points. To give an answer to this question requires an analysis of the factors which seem to influence the loci of stutters.

Let us go back to the data previously cited regarding stuttering with relation to the various parts of speech. It was pointed out that the parts of speech which contribute most to sentence 'meaning' were stuttered most; adjectives and nouns ranked first and second in difficulty and prepositions and articles were least difficult. It is reasonable to assume that the stutterer should be most desirous of speaking fluently those words which are most important in the communication of what he has to say. Let us state the matter another way: In relation to those words which contribute most to the 'meaning' the stutterer is trying to convey, it is likely that he would have an increased negative evaluation of non-fluent utterance. Probably the stutterer is marginally aware that his auditors are paying closer attention to him at these points which are most significant, and this awareness would result in a stronger negative evaluation of the social consequences of non-fluency at those points. (Any other negative evaluations which the stutterer habitually makes in relation to any aspect or consequence of non-fluency are also most likely to be reinforced at the moment of uttering these crucial words.)

These same influences of 'importance to meaning' and of conspicuousness are found in the other factors which govern to some extent the loci of stutters, though their operation is not quite so obvious. In the phonetic factor of difficulty, for example, we find the consonants to be more difficult than the vowels for the group as a whole and for almost every individual subject. Now it is the consonants which contribute clarity and distinctness to speech, as opposed to vowels which carry most of the speech volume.

Phoneticians have pointed out that most speech would remain understandable even if the so-called neutral vowel (as in the second syllable of *sofa*) were the only vowel used. On the other hand severe cases of cleft palate speech, in which most of the consonants are distorted in the direction of sounding like *n*, are understandable only with the greatest difficulty. One may reasonably draw the inference that the greater relative importance of consonants for clarity and distinctness—and thus for ‘meaning’—may to a large extent account for stronger negative evaluations of non-fluent utterance of consonants.

Words occurring at the beginning of a sentence are conspicuous because of their position, even though they may not contribute more to the sentence ‘meaning’ than any other group of words. This relatively greater prominence would seem to account for the greater likelihood of strong negative evaluations of non-fluency being made in relation to the first few words of a sentence. An accented syllable is by definition one which is prominent by virtue of the greater stress of utterance it receives; here again the influence of prominence or conspicuousness may be assumed to result in strong negative evaluations of non-fluency.

In this connection it is significant that slightly over 92 percent of all the stutterings recorded in the collection of data for these studies were judged to occur in relation to the initial sounds of words.⁹ Now it is obviously possible for the speech of the stutterer to be interrupted at any point whatsoever, whether in relation to the initial sound of a word, the initial sound of a syllable which is not the first syllable, a medial sound of a word or syllable, or the final sound of a word or syllable. Yet fewer than one-half of one percent of the 30,151 stutterings studied were recorded in relation to sounds not occurring at the beginning of a syllable. There seems to be no adequate physiological or phonetic explanation for this fact, but the evaluational significance of the initial sounds of syllables and particularly of words would seem to be analogous to that of the opening words of sentences.

It is hardly necessary to state that the ‘normal’ speaker rarely ‘thinks’ of the words he is uttering in terms of their grammatical function, the sounds they begin with, their accented syllables, or their position in the sentence, and though the ‘stutterer’ may differ from the ‘normal’ speaker in various other respects, it is highly improbable that he differs in this one. Yet the statistical data clearly indicate that he is differentiating certain words from the rest. Without being clearly conscious of it, the stutterer is locating an overwhelming proportion of his stutterings on words with certain characteristics of prominence and importance to communication, and this behavior seems to be most adequately described in terms of evaluation.

The evaluations of non-fluency, of its likelihood, and of its consequences seem to depend on other neuro-semantic processes involving numerous identifications. For example, the stutterer identifies his own evaluation of stuttering with that of his listener. Now the stutterer rarely has any definite knowledge of his listener’s semantic reactions to stuttering speech. Indeed, the listener may be far less aware of the interruptions than is the stutterer, and his semantic reactions may in that case be best described as an unawareness that there is anything to be negatively evaluated. But the stutterer as-

⁹ See the study of Wendell Johnson and Spencer F. Brown referred to in footnote 3.

sumes that his listener has the *same* strong negative evaluation of non-fluency which he himself has, and proceeds to behave on the basis of this identification.

Introspective reports of many stutterers indicate that they tend to regard a word on which they have stuttered 'badly' as being a word which will occasion difficulty the next time it is attempted. This evaluation is rarely stated in terms of probability of the word's being difficult—he 'knows' the word is one on which he is going to stutter. Obviously here is another mis-evaluation, an identification of neuro-muscular behavior in a given context in the past with neuro-muscular behavior about to be initiated in a different context. Yet this is a very frequent and a very powerful identification among stutterers, and accounts for the special difficulties with certain sounds or words that any given stutterer may present.

Certainly other identifications may be found in the neuro-semantic processes of stutterers, but those cited here will serve to show what kinds of identifications occur and how they operate to influence those evaluations of which stuttering may be the observable manifestation. The fact that a person may stutter hundreds of times a day indicates how thoroughly canalized such identifications and mis-evaluations may become. Obviously, then, semantic re-training should be a part of any therapy for stuttering, with special emphasis on the elimination of identification. It is true that some so-called mental hygiene therapies tend to overcome some of the worst of the stutterer's identifications, but only partially and indirectly as a rule. A thoroughgoing training in non-identity would be far more efficient and helpful.¹⁰

This should not be construed to mean that semantic re-training is the only therapy needed for all cases of stuttering, nor should it be inferred that the present paper attempts to propose a general theory of stuttering based on this analysis from the viewpoint of general semantics. It has been shown, however, that mis-evaluations are responsible for many of the immediate difficulties of the stutterer. If semantic re-training is not a sufficient therapy, it is certainly an essential.

¹⁰ See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

A QUANTITATIVE STUDY OF EXTENSIONAL AGREEMENT WITH SPECIAL REFERENCE TO 'STUTTERING'*

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The study here presented is concerned with the general problem of a quantitative approach to certain aspects of the study of definition, and with the specific problem of applying this approach to the study of the definition of the word *stuttering* as a means of clarifying certain persistent issues with respect to the conditions to which it refers. The findings may be related both to other research on *stuttering* and to the problems of diagnosis and therapy. Inasmuch as it attempts to relate the term *stuttering* with users of the word and with what the word is supposed to stand for, the study may be considered as falling within the field of applied general semantics.¹

The means of obtaining the extensional definitions consisted of having the subjects listen to a phonograph record, follow along on a transcript, and indicate on the transcript each place where *stuttering* occurred. To measure reliability, or consistency, each subject was asked to repeat his performance a week later. The subjects used included twenty stutterers, thirty-one speech clinicians, and thirty-eight normal speakers—university students, relatively unfamiliar with *stuttering*, who for purposes of this study were laymen; other subjects were used, also, in phases of the study not here reported. The sample of speech used on the phonograph record contained a large number of 'borderline instances' (e.g. slight hesitations, minor breaks in rhythm, pauses in extemporaneous speech, etc.) as well as a number of relatively conspicuous or severe speech blockages. The record was made by having two stutterers read, two non-stutterers read with simulated *stuttering*, and two other non-stutterers speak extemporaneously. The observers who listened to the records and indicated occurrences of *stuttering* were not told how the record was made nor who the speakers were, nor were they given a verbal definition of 'stuttering' before listening to the records. To have given the observers such information, or such a definition, would have vitiated the investigation.

The particular sample of speech on this phonograph record may hardly be considered as an ideal or random sample in the statistical sense. Hence, the absolute amount of disagreement found in this study might be considerably different from that which would be obtained if a different sample of speech were used. However, it is reasonable to assume that the relative amounts of disagreement found among the various groups of subjects would remain the same. For purposes of this discussion, therefore, the findings are indicated only in their topological relationships rather than in their absolute metrical relationships.

* This study was done as a Doctoral dissertation at the University of Iowa in 1939 and was directed by Wendell Johnson. A full report, entitled 'A Quantitative Study of Extensional Meaning with Special Reference to Stuttering,' is on file in the University of Iowa library.

¹ See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

As to the total range of items included under the word *stuttering*, it was found that stutterers indicate significantly more items than do non-stuttering 'lay' individuals. In this study, the extensional definitions of 'stuttering' were thus significantly different, i.e. not congruent. (The reliability of marking items was not significantly different for the two groups.) This difference in definition has significance depending upon what frame of reference we use. In an absolute sense, we are not justified in saying that one group was 'right' and the other 'wrong', since at the present time we hardly have an adequate operational definition of stuttering (in terms of objective physiological or other criteria) to use as a reference point. In the past, most research studies have defined *stuttering* in terms of the judgment of the experimenter or of the subject, and have tried to find physical correlates. That is, they have tacitly assumed the validity of the extensional definitions made by the experimenter or by the subject.

If we take the stutterer as the center of the frame of reference, the definition of *stuttering* given by the non-stutterers would be 'wrong.' However, there is a certain justification in reversing the frame of reference and suggesting that, for purposes of therapy, the stutterers' definition *ought* to correspond to that of the non-stutterers; i.e. the stutterers' definition includes too large a range of speech items. The justification for this point of view is that the stutterer's 'emotional' reaction to his speech is made in terms of what he regards as the definition of *stuttering* held by the total population, especially the approximately 99 percent who are non-stutterers. The semantic reactions of the stutterers are thus clearly false-to-fact. We may consider, in this connection, the borderline instances which are included in the stutterer's definition and excluded in the non-stutterer's. In reacting 'emotionally' to items of this type, the stutterer is reacting to a type of speech considered 'non-stuttering' by 99 percent of the population. This is a situation which is found quite often in speech therapy, and it is difficult to convince the stutterer that certain breaks in speech are not heard as stuttering by his hearers; there is a great unwillingness on the part of the stutterer to accept this as a fact.

The range of items indicated by speech clinicians was not significantly different (numerically) from that indicated by the stutterers. This fact, however, does not invalidate the implication for therapy indicated above, nor the validity of the layman's definition. The social criterion used emphasizes the opinion of the 99 per cent as against the 1 percent in the *labelling* of certain speech items.

These findings, together with certain other findings of the study, may be summarized as follows:

1. Normal speakers, unacquainted with speech pathology, indicate a significantly smaller number of items as instances of stuttering than do stutterers or speech clinicians.
2. Normal speakers have less variability among themselves than do clinicians or stutterers in indicating items of stuttering.
3. Reliability of marking items, measured by three methods, was approximately equivalent for the normal speakers, clinicians, and stutterers; no group was markedly superior.

4. Of the total number of different items indicated as stutterings, half of them were so indicated by less than 25 percent of the group.

5. In terms of the total number of items indicated, the normal speakers agreed best, the clinicians next best, and the stutterers least.

6. Of the number of different items upon which each group agreed, more than 75 percent were approximately the same; the number of items on which there was less agreement than this was much smaller for the normal speakers than for the other two groups.

7. Of 219 different items indicated as 'stuttering', 45 occurred in normal extemporaneous speech. (The speakers, in everyday life, were not regarded by themselves or others as stutterers.)

8. Over 76 percent of the subjects in each group indicated at least one item in the normal extemporaneous speech as 'stuttering'.

9. Of 219 different items indicated, only 39 were agreed upon by 75 percent or more of any one group; for only four was there greater than 90 percent agreement by all three groups.

10. The agreement among eleven recognized experts in speech pathology was no greater than that among a number of persons unacquainted with the field;² stutterers agreed less well among themselves than did normal speakers or experts.

11. The addition of visual to auditory cues, by means of sound-film records, did not tend to increase materially the agreement, when practice and adaptation effects were taken into account.

The findings in general demonstrated an impressive degree of vagueness for the word *stuttering*, in terms of marked disagreement among several groups of individuals in relating it to the auditory and visual phenomena to which different persons apply it—ranging all the way from noticeably severe breaks in rhythm to very minor hesitations. When normal extemporaneous speech is embedded in other speech which has more marked fluency (stuttering) the pauses and hesitations of the 'normal' speaker will often be taken for stuttering, or at least so labelled.

Greater acquaintance with stuttering (in a clinical way) on the part of judges does not necessarily bring about greater degrees of agreement among them. Persons who have worked with stutterers, and stutterers themselves, show greater variability in the number of items they indicate as instances of stuttering than do naïve persons unacquainted with speech pathology.

The results of an experiment of this type have to do with the disagreement occurring at the borderline between stuttering and non-stuttering. On very severe stuttering there is little disagreement as to whether stuttering is taking place, even though there may be considerable disagreement as to *when* it is, and is not, taking place. The disagreement that has been indicated has to do with those blocks and hesitations more or less similar in many instances to 'normal' varieties of non-fluency. This borderline, needless to say, has great importance in relation to the problem of stuttering.

This study has shown that stutterers interpret as stuttering breaks in fluency

² The 'recognized experts' served as subjects for the experiment during national meetings of speech pathologists; all held the Ph.D. degree, all belonged to the American Speech Correction Association, and seven were directors of speech clinics.

which normal speakers who are not speech pathologists would not consider stuttering. To simplify the point: the stutterers marked a certain number of items as instances of 'stuttering'; the normal speakers indicated a considerably smaller number. Some persons might then ask the question: 'But how many stutterings were actually there—which group was nearest to being right?' This question, as will be seen on close analysis, is 'meaningless'. In the most valid sense of the word, *stuttering* refers to that which is labelled *stuttering*. Electroencephalograms, electromyograms, cardiograms, acoustical analysis, etc., will not give a clear-cut indication of the time when stuttering is taking place. Hence, an extensional definition of stuttering must take into account the semantic factors involved (i.e. whether the person labels himself a *stutterer* and what effect such labelling has on the person).

From the standpoint of therapy, the findings in this study would tend to indicate, to a certain extent, that the stutterer need not consider himself sharply differentiated from the normal speaker, especially insofar as his speech breaks are of the 'borderline' type. At least from the standpoint of what the average person recognizes as stuttering, he need not consider himself sharply 'marked off' from the average speaker. To another stutterer some of his speech breaks may be considered 'pathological' but to the average, normal, disinterested listener, they may pass unnoticed. These points have obvious implications for therapy.

As far as the accuracy of diagnosis is concerned, it is well to remember that over 50 percent of the items indicated at all as 'stuttering' in the experiment were such that less than 25 percent of any group of subjects considered them as stuttering. And over three-fourths of the subjects indicated some items in the two minutes of extemporaneous ('normal') speech as stuttering. How accurate, then, is the diagnosis or labelling of persons as *stutterers*, as having 'stuttering' in their speech? When one takes into serious consideration the diagnosogenic nature of stuttering, the present findings would tend to suggest extreme caution in any labelling that might be done. Young 'stutterers' will be found to be doing a great many of the same things the normal speaker does. Stuttering is certainly, at least in part, *semantogenic*.³ The present study serves as a quantitative measure of the degree to which inaccuracy *may* be present in diagnosis.

The disagreement with regard to the etiology of stuttering may be, in part, a semantic (i.e. word-fact relating) type of disagreement. Perhaps some of the arguments may arise merely because different facts are being referred to; the 'facts' of stuttering are anything but clear-cut. The exaggerated phenomena of stuttering may not be at all comparable to the subtle, borderline phenomena.

From the standpoint of research, the present findings would tend to throw into grave question the *exactitude* or specificity of certain statements that have been made concerning the phenomena of stuttering. Stuttering, in the past, has been roughly defined in research as 'those items which the experimenter indicated'. Three methods of determining 'reliability of checking responses', employed in this study, indicate that

³ The terms *diagnosogenic* and *semantogenic* were introduced in 1939 by Wendell Johnson in *Language and Speech Hygiene*, General Semantics Monographs No. 1 (Second edition; Chicago: Institute of General Semantics, 1941). This monograph is based on Alfred Korzybski's *Science and Sanity* (*op. cit.*). The *diagnosogenic* and *semantogenic* principles are further discussed in Wendell Johnson's 'The Problem of Stuttering from the Point of View of General Semantics,' in this volume.

the method commonly used in the past has probably yielded a spuriously high reliability. The variability in the number of items checked by different subjects in the present study, even those well trained in speech pathology, would tend to indicate that the absolute number of stutterings in any given sample of speech presented in past studies in the field would probably vary considerably from experimenter to experimenter. The present study would tend to indicate that the past findings in research studies may not be considered in too sharp detail; the picture of stuttering presented by past studies must be considered, as it were, through a 'diffusion filter', with fine, sharp details eliminated; only the bold outline remains—the fine differences are obscured.

This study arose out of the failure of past methods to take into account certain of the most important factors in connection with the problem of stuttering, that is, semantogenic factors. The methodological approach used in the present investigation arose out of insights stimulated by general semantics.

This study has demonstrated the use of a number of methods for the measurement of agreement in word-fact relating. Other terms, the extensional definitions of which might be crucial to certain issues in clinical and educational practice, may be studied in a similar way. As this study has shown, the social and psycho-logical implications of extensional word-definitions may be approached experimentally and given exact quantitative treatment through the use of objective techniques.

AN INVESTIGATIVE APPROACH TO THE PROBLEM OF ONSET OF STUTTERING*

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Stuttering has been the subject of much research during the past two decades, but relatively little of this research has dealt with the onset of stuttering. This paper will discuss one research investigation of speech fluency in young children, in which the implications regarding the onset of stuttering are of particular interest from the point of view of general semantics.¹

Sixty-two children, thirty-six of whom were boys, ranging in age from twenty-four to sixty-two months, and ranging in I.Q. from 105 to 162, were studied. They were enrolled in the Iowa Child Welfare Research Station Preschools. During the free-play period each child in turn was a subject for one hour, and all that he said was recorded by the experimenter. A second recorder noted as much as possible of what was said to the child and the activities of the child and his companions. The second observer was instructed to keep his record as objective as possible, using description rather than interpretation.

The analysis of the speech data thus gathered was centered around an attempt to discover characteristics of repetition in young children, and to evaluate some few factors with regard to their relation to speech repetitions.

In this study a repetition was broadly defined as the utterance of the same syllable, word, or group of words more than once. Thus, three different types of repetitions were available for study. A consideration of the data led to the necessity for expanding the definition of repetitions in certain specific cases, so it should not be assumed that the preceding definition is conclusive.

Several numerical scores were computed for each child, the ones of most interest to this report being the instances of each type of repetition in terms of the percentage of all words uttered by the child.

The distribution of syllable, word, and phrase repetitions, combined into one composite score for each child, was found to be fairly normal. The mean of the distribution was 24.04 percent $\pm$ 8.97. This finding would tend to show that speech repetitions are not characteristic of only a small group of children, but are part of the speech pattern of all of them. All of the children repeated, the percentages of words involved in repetitions ranging from 6.2 to 43.9.

Viewed individually, the three measures of repetition yield further information.

* This study was done as a Doctoral dissertation at the University of Iowa under the direction of Wendell Johnson. The complete manuscript, entitled 'The Relation of Repetitions in the Speech of Young Children to Certain Measures of Language Maturity and Situational Factors,' is on file in the University of Iowa library. A fairly detailed report of the investigation has been published in the *Journal of Speech Disorders*, IV (1939), 303-318 and V (1940), 238-246.

¹ See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

The distribution of phrase repetitions was found to be roughly symmetrical and approximately normal with a mean of .025, that is, 25 instances of phrase repetitions in 1,000 words. Whole word repetitions were skewed to the high end of the distribution with a mean of .014 (14 instances per thousand words) and a range from 0 to .041. Syllable repetitions gave the most interesting picture. There was extreme skewness to the high end of the distribution with the mean at .004. Of the sixty-two children studied, sixteen did not present any syllable repetitions. One child was 12.4 standard deviations beyond the mean, having presented 66 different syllable repetitions in 1,000 words. The distribution did not extend unbrokenly from the mean to this point, but for a distance of 8.8 S.D.'s there was no child represented. This one child was judged a stutterer by parents and teachers alike. It is unfortunate that the experimental group was not larger, for it would be very useful to know whether or not this curve would be bi-modal for the whole population represented by the sample observed in this study. A boy who scored .021 was considered a *stutterer* by one teacher but not by others, and a girl who scored .019, just two less instances of syllable repetition in 1,000 words, had apparently attracted no attention because of her repetitiveness.

There were five children in this group who had been referred as *stutterers* to the University of Iowa Speech Clinic the year prior to the one in which this study was made. They scored 0, .003, .005, .009, and .016 on the syllable repetition measure. Possible interpretations are that such a measure as this does not adequately differentiate stutterers from other children, or that the five stutterers had been cured, or that there was no very substantial justification for their having been diagnosed as *stutterers* in the first place. The last of these interpretations would appear to be the most basically valid, everything considered.

Among other measures studied, the next most interesting was the distribution of the number of repetitive syllables in relation to verbal output (the instances of syllable repetition multiplied by the number of times each syllable was repeated, and this sum divided by the number of words spoken). The distribution is markedly skewed to the high end of the scale. The same sixteen children had no syllable repetitions. The mean was .013, or 13 repetitive syllables in 1,000 words. The range was from 0 to .168. The 168 repetitive syllables in 1,000 words were presented by the so-called *stutterer* and in this measure he was 8.8 S.D.'s from the mean.

A thorough analysis of the various measures of repetitiveness indicated that measures which deal with instances of syllable repetitions and with the number of repetitive syllables used in syllable repetitions are the best measures for determining the children who deviate markedly from the group.

Intercorrelations between the various measures of repetition showed that prediction from one type of repetition to either of the other two was very limited. For example, children who presented a strong tendency to repeat phrases did not necessarily show a correspondingly strong tendency to repeat words or syllables, also.

With respect to age differences, medians for the boys and girls, when divided into three age groups, showed a decrease in amount of repetition with age with the exception of syllable repetitions. The trend toward a decrease was significant statistically only when the lowest age group was compared with either of the other two groups.

With respect to sex differences, the only clear-cut differences were found with regard to instances of syllable repetition and the extent of syllable repetitions, boys exceeding girls on both measures.

In a further portion of the study, the relation of language maturity to the amount of repetition was investigated. The I.Q., which may be regarded as representing, among other things, the degree of language maturity, correlated only slightly with all measures of repetition, and it was concluded that no significant relationship exists.

Vocabulary, articulation correctness, the degree of intelligibility, the percentage of simple responses, and the percentage of complex responses all correlated slightly negatively with repetitiveness. Verbal output showed no particular relation, and the percentage of incomplete responses and the percentage of functionally complete but structurally incomplete responses correlated only slightly positively with the repetition measures.

It was found that the incidence of syllable repetition, which, as we have seen, was of particular interest, was not significantly related to any of the measures of language maturity.

Partial correlations, with chronological age held constant, gave correlations between repetitiveness and mental age which tended to become even lower, though the relation of repetitiveness to chronological age was not marked.

Correlations of syllable repetitions with measures of language maturity for boys and girls separately indicated relationships which were almost insignificant.

Tentatively then, we may say that the explanation for the speech repetitions of preschool age children must be sought elsewhere than in the area of language maturity, as here measured.

The final portion of the study constituted an attempt to discover whether repetitions of three or more in extent, such as *th—th—th—this* or *this this this this*, were related to situational factors. Systematic measurement of the psychological forces at play in any of these situations was not feasible, so descriptions only were used. It should be remembered that these situations are accompaniments of repetitions and that each situation is discrete. Since no two of the situations are equivalent semantically, the grouping is used only to facilitate treatment.

The study deals here with 53.8 percent of all syllable repetitions, the remaining repetitions being less than three in extent. It was advisable in this part of the study to deal only with the instances of relatively severe repetition.

Rankings of the first ten items only, based on instances of syllable repetition follow:

Rank	Item
1.	wants to direct activity of another child according to his own plan
2.	excitement over own activity
3.	coerced by teacher resulting in changed activity
4.	wants an object possessed by another child
5.5	upholds status in spite of another child
5.5	offers information to teacher
7.5	offers information to child
7.5	asks another child for information
9.5	attempts to direct activity of teacher
9.5	attempts to attract attention of teacher

A number of questions arise from the results of this study which are of interest to the general semanticist. These questions center mainly around the problem of the diagnosis of stuttering, particularly the sources of disagreement and 'error' in such a diagnosis in specific cases, and the possible effects of the diagnosis when applied to specific children. First of all, if we define 'normalcy' in terms of what the group does, then we must conclude that speech repetitions, at least within the frequency limits found in this investigation, are normal for preschool-age children. Some of the children do, of course, repeat more than others. There are two fairly obvious possibilities which we may consider in this connection.

The first is that there may be a larger number of disturbing situations, of which the types listed above may be illustrative, involved in the experience of the child who repeats more than the average. Possibly the child with the most fluent speech would react similarly if placed in the same neuro-semantic environment. Insofar as this is a valid interpretation, we could not consider the first child 'abnormal'. The second possibility is that through some type of semantic reactions on the part of his listeners—parents, teachers, etc.—the child who repeats more has been influenced to evaluate his speech as 'abnormal', and to become, therefore, more hesitant, anxious, and repetitious in speaking. The child would then present what Johnson has termed a *semantogenic*, or more particularly a *diagnosogenic* disorder.²

Fully aware that the present interpretation is merely suggested, and not made absolutely mandatory, by the reported research, the writer would like, nevertheless, to venture the opinion that it is not impossible nor unusual to produce a young *stutterer* by labelling as 'abnormal' or as 'stuttering', speech which is normal or even more fluent than average. Parents and teachers, as a rule, are only in a very small way equipped to know when the label of *abnormal speech* can be applied usefully and with statistical justification, for even the norms derived from this study (the first in this area) are too tentative for rigorous diagnostic use. Those who have worked with large numbers of young children may conceivably label 'correctly' the child who is at either extreme of the fluency distribution, but the bulk of youngsters are not at either extreme. Possibly it is the relatively average child who is likely to suffer most from being labelled with the word *stutterer*; at least, he is most likely, perhaps, to be so labelled by incompetent lay 'diagnosticians'.

The findings of this investigation, and the indicated interpretations of them, serve to place the problem of the onset of stuttering in a new light, and to make advisable a thorough re-examination of traditional and prevailing theories concerning causes of stuttering, as well as methods of prevention and treatment. Insofar as stuttering is to be regarded as a *semantogenic* and *diagnosogenic* disorder, it may be assumed that, in a significant degree, basic preventive and remedial principles are to be abstracted from general semantics.³

² Wendell Johnson, *Language and Speech Hygiene*, General Semantics Monographs, No. 1 (Second edition; Chicago: Institute of General Semantics, 1941), p. 38.

³ For a fuller discussion of this matter see Wendell Johnson, 'A Study of the Onset and Early Development of Stuttering,' *Journal of Speech Disorders*, in press. Also by the same author, 'A Semantic Theory of Stuttering,' in *A Compendium of Theories of Stuttering*, edited by Eugene Hahn, Stanford University Press, also in press; and 'The Problem of Stuttering from the Point of View of General Semantics' in this volume.

A STUDY OF TENSION IN RELATION TO BREAKDOWN*

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The importance of high muscular tension as a symptom of semantic maladjustment was first brought to our attention by Alfred Korzybski, author of *Science and Sanity*, in one of his seminars in 1938. If such tension is cumulative and can be taken as an indicator of the habitual reactive attitude of the individual in situations of stress, it seemed logical to measure individual differences in muscular tension under stress and investigate their relation to the subsequent disorganization of behavior.

The investigation was undertaken in order to test the hypothesis that (a) individuals react to the same situation with different degrees of 'tension', (b) the tenser individual will break down sooner under increased strain.

'Tension' was provisionally defined as the total muscular contractions occurring in states of action as contrasted with 'tonus' representing the minimal muscular contractions present in a state of complete rest. 'Breakdown' was taken to mean a disorganization of any given behavior pattern so severe that, if continued, the task could not be carried on at all.

HISTORICAL REVIEW

In recent years, an increasing number of studies on various aspects of muscular tension has given evidence of the growing interest of psychologists in this field. The main interest of these investigators centered around the rôle of muscular tension in the mechanics of effort, and the relation of changes in muscle tension to 'emotional' states.

1. TENSION AND THE MECHANICS OF EFFORT

Morgan and Bills, among the earliest workers in the field, reported that increased tension was accompanied by increased efficiency of performance.¹ Freeman found that muscular tension reinforces performance under distraction and during long-continued operations, but also noted that strong tension, while facilitating non-voluntary reaction, tends to decrease the accuracy of discrimination.² He also reported a tendency to diffusion of tension to more remote systems under strong stimulation, which was

* *Editor's Note:* This paper as presented at the Congress was an abridgment of Dr. Arnold's thesis for the Master's degree at the University of Toronto, 1940. These excerpts appear here by kind permission of the publishers of the *Journal of General Psychology* in which the entire article, giving complete details of the original study, is published. See XXVI (1942), 315-346.

¹J. J. B. Morgan, 'Overcoming Distraction and Other Resistances,' *Archives of Psychology*, V (1916), 1-84; A. G. Bills, 'The Influence of Muscular Tension on the Efficiency of Mental Work,' *American Journal of Psychology*, XXXVIII (1927), 227-251.

²G. L. Freeman, 'Tonus Changes during Interrupted and Completed Mental Work,' *Journal of General Psychology*, IV (1930), 309-334. G. L. Freeman and S. B. Lindley, 'Two Neuro-muscular Indicators of Muscular Fatigue,' *Journal of Experimental Psychology*, XIV (1931), 567-605. G. L. Freeman, 'Facilitative and Inhibitory Effects of Muscular Tension on Performance,' *American Journal of Psychology*, XLV (1933), 17-52.

inversely related to the learning score.³ Thus tension was sometimes stated to be a facilitator, sometimes an inhibitor; or to be facilitative in some tasks and inhibitory in others.⁴ To the question of how the occurrence of muscular tension in mental work should be explained, Freeman answers that it represents a reinforcement of mental effort,⁵ while Bills considers it an overflow phenomenon incidental to cerebral excitation.⁶

2. TENSION AND 'EMOTIONAL' STATES

Tension and 'emotional' states have been investigated first by Luria and on this continent by Duffy.⁷ Luria found an increase of grip tension associated with 'emotional' stimuli. Duffy found that individual differences in muscular tension were related to 'emotional' stability and adjustment; children with high tension scores tended to be rated lower on these two traits.

Of clinical findings in relation to tension and 'emotional' states, Jacobson's extensive work provides pertinent material. He reports in his latest article that muscular tension is higher in neurotics than in normal people.⁸ Korzybski insists on the basis of clinical observations (unpublished) that the degree of general muscle tension noticeable in an individual is a direct result of previous 'emotional' defensive reactions and could, therefore, serve as an indicator of his present reactive tendencies.* Thus, all investigations seem at least agreed that a moderate amount of tension increases the efficiency of the individual at least in certain tasks, but that excessive tension is detrimental to performance, whether we call it 'effort' or 'emotion'.

³ G. L. Freeman, 'The Spread of Neuro-muscular Activity during Mental Work,' *Journal of General Psychology*, V (1931), 479-492.

⁴ G. L. Freeman, 'The Optimal Tension for Various Performances,' *American Journal of Psychology*, LI (1938), 146-151.

⁵ G. L. Freeman, 'Tonus Changes,' *op. cit.*; 'Compensatory Reënforcement of Muscular Tension Subsequent to Sleep Loss,' *Journal of Experimental Psychology*, XV (1932), 267-283.

⁶ A. G. Bills, *op. cit.*

⁷ A. R. Luria, *The Nature of Human Conflict* (New York: Liveright and Co., 1932); E. Duffy, 'The Measurement of Muscular Tension as a Technique of the Study of Emotional Tendencies,' *American Journal of Psychology*, XLIV (1932), 146-162; 'The Relation between Muscular Tension and Quality of Performance,' *Ibid.*, 535-546.

⁸ E. Jacobson, 'The Neurovoltmeter,' *American Journal of Psychology*, LII (1939), 620-625.

* *Editor's Note*: Here it is well to point out an important differentiation which students often fail to make between Korzybski's notions of neuro-semantic tension and techniques of relaxation and the work of others. This and other points are so well formulated in a recent communication from Mrs. Arnold that I can do no better than quote from her letter of June 17, 1942.

I obtained my Ph.D. this spring, the title of my thesis is 'Emotional factors in experimental neurosis'. For it again I owe thanks to Count Korzybski and his seminars where I learned the lesson that sometimes an explanation can be found by assuming two causative factors instead of one. Briefly, I believe I have found instead of one vague undifferentiated 'emotional' state with essentially similar physiological symptoms, two basically different physiological syndromes, one of which accompanies 'anger', the other 'fear', the former consisting in excitation of the para-sympathetic, the latter in excitation of the sympathetic nervous system. This would explain Korzybski's contention that his form of neuro-semantic relaxation is fundamentally different from other relaxation techniques. If it relaxes blood vessel walls, it would depress the sympathetic nervous system, thus abolish 'fear' primarily and directly. Other techniques may be efficacious for a calming of excitement, of hyperactivity, but would not eliminate 'fear'.

3. TENSION AND BREAKDOWN

Excessive tension was first shown by Luria⁹ to be present in serious conflict situations leading to a breakdown of the behavior pattern involved. According to him, any activity which does not find its organized motor outlet, results in a general spread of excitation, destroying the organization of all the chief systems of behavior. Luria distinguishes two kinds of conflict which can be produced experimentally: *conflicts of the setting*, which result from two mutually conflicting tendencies; and *conflicts of defection*, created by a situation in which the subject's assurance of his ability to solve a problem is destroyed by his defection in the actual solution.

Conflicts of the setting have been used so far in experiments inducing neuroses in animals. Freeman recently has also used this approach for human subjects. He found considerable carry-over of tension from one test to the next, with performance levels shifting as the thwarting conditions are decreased or increased.¹⁰ At the same time, thwarting conditions were never exactly balanced by postural tensions. He suggests, therefore, that such over- and under-compensation may be a personality characteristic providing a key to probable reactions in any future conflict.

METHOD

Obviously, a conflict of the setting in which a tissue drive is thwarted, can be used with human subjects only within very narrow limits. In our own investigation it was decided, therefore, to use a conflict of defection which has not yet been systematically explored. Our problem had to fulfill two conditions: it must involve a strain on the individual, and must allow for an experimental increase of that strain, which would lead to a breakdown of the organized behavior pattern.

After some preliminary exploration, it was decided to use shorthand dictation with gradually increasing speed. The subjects were twenty-two fourth year students from one of the city's commercial schools (age range, 16:1 to 19:11 years—seventeen girls, five boys), who were accustomed to shorthand tests and were concerned about their speed. For shorthand dictation, a dictaphone record was prepared increasing in speed from 94 words per minute in the first minute of dictation to 164 words in the sixth minute.

To test the differential effect of tension on simple and complex tasks, it was decided to add to the fairly complex task of shorthand writing the simple task of tapping 'as fast as you can.' The only speeding-up feasible in this task was to ask the subjects after 20 seconds of tapping to tap 'twice as fast' for another 20 seconds. In order to compare the effect of the 6-minute shorthand writing on individual tension scores one period of tapping was given at the beginning of the experiment, another after the shorthand writing. Finally, periods of 'relaxation' and 'expectation' were interspersed in order to compare tension during quiescent states with that during active states. Thus the tasks imposed were in the following order: (1) 20 seconds expectation before

⁹ Luria, *op. cit.*

¹⁰ G. L. Freeman, 'Postural Accompaniments of the Voluntary Inhibition of Micturition,' *Journal of Experimental Psychology*, XXIII (1938), 45-61; 'The Effects of Inhibited Micturition on Interrupted and Completed Acts of Unrelated Origin,' *Journal of General Psychology*, XIX (1938), 277-283.

tapping; (2) 20 seconds tapping 'as fast as you can'; (3) 20 seconds tapping 'twice as fast'; (4) 20 seconds relaxation; (5) 6 minutes listening to dictaphone record; (6) 20 seconds expectation before writing; (7) 6 minutes writing shorthand; (8) 20 seconds relaxation; (9) 20 seconds expectation before tapping; (10) 20 seconds tapping 'as fast as you can'; (11) 20 seconds tapping 'twice as fast'; (12) 20 seconds relaxation.

Of the many methods used so far for measuring normal or induced tension, Jacobson's neurovoltmeter-technique is probably the most adequate.¹¹ However, it was felt that a simpler method would be preferable if it could be made sensitive enough to register slight changes in tension. This was accomplished by using Marey tambours gripped by the subject in such a way that the thumb rested on the centre of the rubber covering. These tambours were attached to two rubber tubes which were connected with two other Marey tambours recording left and right pressure on a kymograph ribbon ten inches wide which travelled at a constant speed of one-eighth inch per second. For tapping, a stylus with metal tip was attached to the right hand tambour and used in combination with a tapping board; for shorthand writing, a pencil was fitted into the stylus.

The pressure records were scored by the method first described by Buford Johnson.¹² Expectation, tapping, and relaxation pressure measurements were added for the first and second half of each 20-second task separately; shorthand pressure measurements (6-minute task) for each half-minute corresponding to error scores which were also computed for each half-minute.

All shorthand performance records were scored by one teacher. Errors were marked only if dictated words were either omitted or completely illegible. After the sheets were scored, the breakdown of this particular behavior pattern was defined empirically as the number of words missed before the end of the dictation plus the number of words marked 'unreadable' by the teacher, provided they occurred in blocks of fifteen or more. It was considered that mere omissions in the text could hardly be counted as breakdown because they depend mostly on the individual's skill and speed. Illegibility, on the other hand, represents a disorganization of this behavior pattern which for practical purposes amounts to a breakdown if it extends over a number of words and phrases. This definition of 'breakdown' has the advantage of providing a graduated scale with units of words instead of time units, and of taking into account the abrupt and striking breakdown which occurs earlier as a temporary disorganization, as well as the breakdown which takes the form of a series of disorganized passages with firm and well co-ordinated writing in between.

RESULTS SUMMARIZED*

The results revealed:

1. Considerable individual differences, which showed a high degree of constancy if conflicting factors were taken into account. Such factors were (a) opposite trends in

¹¹ See Jacobson, *op. cit.*

¹² B. Johnson, 'Changes in Muscular Tension in Co-ordinated Hand Movements,' *Journal of Experimental Psychology*, XI (1928), 329-341.

* For a detailed account of the experiment see text, tables, numbers 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and figures, numbers 1, 2, 3, *Journal of General Psychology*, XXVI (1942), 319-335.

right and left hand during work with one hand (representing 'effort' and 'emotional tension'); (b) opposite trends in habituation during the task.

2. Efficient performance was associated with (a) low or moderate left pressure, (b) decreasing left pressure, (c) high right pressure, (d) increasing right pressure.

3. Breakdown was directly and significantly related to left pressure, and slightly to right pressure.

4. Breakdown was inversely related to (a) skill, as measured by performance before breakdown, (b) intelligence, (c) average school standing.

5. A slight relation between performance in different tasks, probably due to the common factors associated with tension.

INTERPRETATION

Up to this point, we have confined ourselves to showing how a specific measure of muscular tension, left and right grip pressure, is related to different variables in the experimental situation as well as outside it. Now the inevitable question arises: What does the left pressure indicate and how does it fit into a systematic view of personality differences?

In our own experiment, we seem to have an indication of two opposing tendencies, the one as it were localized in the right hand, the other found in the left: the one related directly to performance, the other inversely. We have also found two tendencies at work during the course of the experiment: the majority of individuals tended to decrease left pressure, a minority to increase it. How are we to explain these findings?

In the first place it would be difficult to maintain that we have to deal here with two ways of muscular innervation resulting in two varieties of tension with opposite effects on performance. Both ways of reacting involve striped muscles innervated from the central nervous system, and both are undoubtedly voluntary in the sense that they can be altered or reversed at will. But the left pressure would seem to be involuntary insofar as the observed increase or decrease of tension is unconscious or at least unrecognized, while the right hand tension is more in the focus of attention and therefore could legitimately be said to be more 'voluntary' than the other.

If we provisionally define tension as energy mobilization, we may find some explanation of these two seemingly conflicting aspects in the following considerations.

Energy mobilization would seem to be general and diffuse in childhood, only gradually becoming specialized as definite movement patterns. The infant reaches, as well as cries, with his whole body. In adult life, a far-reaching specialization has taken place, though the progress from general to specific tension is repeated in every task with which we are confronted. We have ample experimental evidence that in any new task, a general diffused tension is apparent until with increasing skill this tension is specialized in the working member and the task becomes comparatively effortless.¹³ Our own

¹³ R. S. Daniel, 'The Distribution of Muscular Action Potentials During Maze Learning,' *Journal of Experimental Psychology*, XXIV (1939), 621-629; S. Renshaw and W. C. Schwarzbek, 'The Dependence of The Form of The Pursuit-meter Learning Function on The Length of The Interpractice Rests,' *Journal of General Psychology*, XVIII (1938), 3-29.

data present the same picture: the best performers, both in tapping and shorthand, relax their left grip pressure gradually and even right pressure becomes gradually less.

It is quite conceivable that the same process is at work in so-called 'higher' or 'mental' functions. Not to be caught in the coils of psycho-physical parallelism, we may stipulate that by 'mental' functions we mean the manipulations of *symbols* as distinguished from the manipulation of *things*. Put in this way, it would seem reasonable to suppose that the manipulation of symbols would require a similarly specialized tension as does the manipulation of things. The name given to this subjective experience of such tension is 'attention.'

If we now call this specialization '*specific tension*,' we mean by this term any mobilization of energy which is directed toward the appropriate locus of work. Thus in tapping we would expect to find specific tension in the muscles of arm, wrist, and hand; in shorthand, on the other hand, we should expect only a moderate amount of specific tension in these muscles, limited by the requirements of efficient movement, while the bulk of specific tension would be in an unspecified locus of 'mental' work. Increasing speed would seem to require an increase of tension in the active muscles.

But not all available energy is directed toward the appropriate locus of work; from the evidence quoted we gather that at first most of the available energy is diffused and only some of it appropriately directed. The result is low achievement at the beginning, whether in childhood, at the beginning of life as compared with adulthood, or at the beginning of a learning task as compared with later achievement. As tension gradually becomes specific (the warming-up process in learning) performance improves. It is conceivable that there are individual differences in the speed with which general tension becomes specific; and also individual differences in the amount of energy which is properly directed in proportion to the amount which remains diffuse and general. That there is always some diffusion has, we think, been proved without doubt; muscular tonus would be the ultimate limit beyond which specialization cannot go, for tonus has to be retained as long as there is action at all.

If our reasoning is correct, the ratio between general and specific tension would be important. We would expect the best performance (everything else being equal) if the highest possible specific tension occurred with the lowest possible general tension. The only assumption we need in this connection is that of a constant amount of energy at any given moment; if general tension is high, specific tension would have to be lower than it could be if general tension were low. This assumption, however, in no way precludes energy reserves. Just as a runner can incur an oxygen debt, so we may suppose that an individual working at forced speed may incur an energy debt which—like an oxygen debt—would have to be made up later from the ordinary metabolic processes. Such an assumption also does not predict how much energy will be mobilized at any time; but it does state that of the energy mobilized the amount spent in general tension will not be available for the required specific tension.

We may consider that every time the individual is faced with a new situation he is faced with a problem and will mobilize his energy to solve it. This mobilization of energy (according to the view advocated here) would take the form of tension—general if the precise locus of specialization is unknown or undeveloped, specific if it is. Thus any well developed skill would provide a specific tension pattern and prevent a waste

of energy in high general tension. But even if there is no available behavior pattern and tension is general to begin with, 'effort' could be termed the attempt to make it specific, to select an adequate action pattern and concentrate energy on it. To the extent to which this attempt is unsuccessful, the performance would be inadequate, achievement fall short of effort.

We may now 'conceive' of a situation in which for some reason or other the selection of an adequate action pattern is not possible; thus tension remains general and subsequent energy reinforcements only serve to increase it. Such a situation would be represented not only by a conflict but by any problem which is beyond the individual's ability, provided only that the need of solving it is imperative. Steadily rising general tension in a situation of this kind would finally reach a point where it no longer could be maintained with any hope of transmitting it into an effective behavior pattern. An accidental, that is undirected, discharge of energy will follow in a pattern which is available: perhaps an 'emotional' outburst or a temper tantrum. In a situation in which the demand on the individual's energy reserves is sudden and overwhelming, failure to convert general into specific tension could be expected to result in various forms of behavior disorganization, from the familiar phenomenon of 'mental blocking' to more serious manifestations like 'freezing to the controls' or complete inability to act in an emergency.

We could now plot the following possibilities of differential tension in problem solving: (a) *low general tension: high specific tension* gives complete efficiency where achievement equals effort; (b) *moderate general tension: moderate specific tension*—less efficiency, effort is greater than achievement; (c) *high general tension: low specific tension*—inefficiency, effort is disproportionate, emotional disturbance; (d) *high general tension: no specific tension*—accidentally found specific tension, emotional outbursts, or disorganization of behavior in various degrees according to amount of energy mobilized.

On the basis of this scheme, 'emotion' would be the result of an accumulation of tension. On the other hand, we could define emotion of any kind (joy as well as anger or fear) as an unsought, and therefore effortless access of energy—a definition which is in complete agreement with physiological facts. Now this increase of energy can either be directed toward specific tension (at least partially) or remain undirected, as general tension, and find accidental outlets. Thus 'work' and 'emotion' may be thought of as opposite poles in a continuous range of energy distribution; and 'emotion' may lead to 'work' just as surely as 'work' may culminate in 'emotion.'

As specialized behavior patterns develop gradually by learning, we must assume that the accompanying redistribution of energy from general to specific tension is learned also. It is possible, however, to learn incompletely and to develop a pattern of reaction in which tension is incompletely specialized. Thus the mobilization of energy for any task would have to be greater in order to approach efficiency, which would raise the level of general tension to the point where the individual becomes liable to overreaction or accidental reactions (such as irritability, excitability) until finally a tense overreactive attitude becomes habitual. Conversely, effective transmutation of general into specific tension, once learned, would tend to keep energy expenditure down

to a minimum, enabling the individual to approach new situations calmly and efficiently, and to marshal large energy reserves whenever needed.

There is no reason to confine the 'conception' of such reactive attitudes to our manipulation of things, and every reason to extend it to our manipulation of symbols. Attention, for instance, could be considered as 'effort' directed specifically towards mental work, and both might be taken to lead to a shift of energy from general to specific tension. Thus we should expect an individual level of 'mental' as well as 'physical' tension which would result through learning in a habitual psycho-physical reactive attitude.

It would seem that some such scheme is required to explain the significance of individual differences in tension. In addition, such an explanation would provide us with a criterion for the efficiency of reaction. We could say that the optimum for the individual would be a low level of general tension acquired and sustained by quick shifts in the direction of energy mobilization from general to specific tension, resulting in high flexibility of reaction combined with the largest possible energy reserves.

If we accept such a scheme, even provisionally we must recognize its limitations: we cannot expect to predict by it the force of the individual's motivation nor the amount of energy at his disposal; at best, all we can expect is to gauge the way in which he habitually reacts and—perhaps—his limit of efficient energy organization.

And now at last we can ask ourselves: does our tentative scheme conform to the results of the present experiment? Is it confirmed by previous experimental findings?

1. DIFFERENTIAL TENSION AND LEFT PRESSURE

Our optimum ratio (high specific tension: low general tension) is only indirectly accessible to measurement. The only possibility we have of measuring specific tension is in simple motor tasks where the precise locus of work is known, or in more complex motor tasks with forced speed where tension must be concentrated in a particular muscle group. These conditions are fulfilled in Tapping 2x and in shorthand writing; our results have shown that right hand pressure is correlated with achievement.

General tension could be expected in any muscle group remote from the locus of action; thus in our own experiment, left pressure would seem to be a fairly satisfactory index. According to our analysis, our optimum ratio would necessarily represent an *individual* optimum dependent on (a) the amount of energy available at the moment (motivation) or in toto (capacity), (b) the difficulty of the task. With the task held constant for all individuals, we still could not depend on scores of low general tension to give us a uniformly significant correlation with achievement. While scores may be low because of appropriate direction of energy, they may also be low because of low energy expenditure due to lack of interest and poor motivation, or due to a learned attitude of withdrawal. On the other hand, achievement may be low either because of high general tension and low specific tension, or with low general tension because of poor ability of the individual. Thus a correlation between achievement and left pressure could only be expected to show a trend in any group of people. And this, according to our results, is what we actually obtain by correlating left pressure and achievement ($r_{LSp} = .46 \pm .11$), proving that there is a tendency for low tension scores to be associated with high achievement.

2. DIFFERENTIAL TENSION AND HABITUATION

Following our scheme, we would further expect the shift in tension from general to specific during the experiment to be important. We find, indeed, that the majority of subjects reduce left pressure (that is, general tension), during a long continued task as well as during the whole course of the experiment. A few subjects, however, increase it; in these cases we are forced to the conclusion that the increase in general tension represents an additional energy expenditure which becomes necessary because of the individual's failure to convert general into specific tension adequately (Figure 4).

Figure 4 shows the total energy output (obtained by adding left and right pressure scores—in our terms, general plus specific tension) of the left-increasing and left-

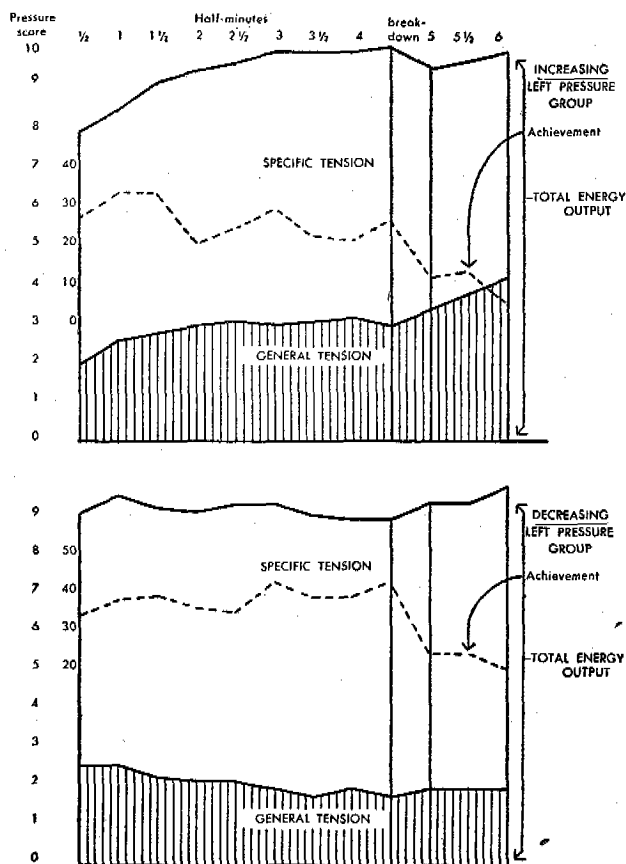


FIGURE 4

SHOWING TOTAL ENERGY OUTPUT IN RELATION TO ACHIEVEMENT DURING SUCCESSIVE HALF-MINUTES OF SHORTHAND WRITING

(For figures 1, 2, 3, see Editor's Note, p. 212)

decreasing groups during shorthand writing. Achievement is drawn in broken lines to scale for both groups. The group with increasing left pressure, that is increasing general tension, actually shows a higher energy output than the other group; specific tension increases somewhat with rising energy output while achievement slightly decreases. After five minutes of writing, there is a sharp drop in achievement combined with a rise in general tension and a gradual decrease of specific tension. We may assume that here the group has reached the limit of efficient energy expenditure so that from now on increased effort will merely result in increased general tension, thus presenting the picture of 'fatigue.' If the strain were continued, we may assume that energy expenditure would continue to rise though an increasingly large part of it would be diverted into general tension. This would, on the achievement side, result in increasing disorganization. Sooner or later the individual would reach the point where he cannot muster sufficient energy over and above general tension, to carry on the specific skill required. At this point, represented by complete blocking of movement ('freezing to the controls'), the breakdown would be complete.

On the other hand, the group which decreases left pressure starts with a slightly higher energy output which is slowly reduced as the performance becomes more efficient. This reduction is primarily due to the decrease in general tension while specific tension remains constant. Achievement is increased up to five minutes, then sharply reduced although remaining well above the achievement level of the 'increasing' group. From the breakdown point onward, energy output slowly rises. We may assume that now energy reserves are mobilized to cope with increasing demands. If the pressure of the task were continued to the point where the motor skill required becomes completely inadequate, we would expect on the basis of our graph that this group would be far more likely to give up than to become seriously disorganized. Our findings that the group with decreasing left pressure tends to less disorganization and earlier giving-up would seem to confirm this point.

3. DIFFERENTIAL TENSION AND BREAKDOWN

The relation of left pressure to breakdown ($r_{LB} + .49$) is also accounted for in our scheme. High general tension means great energy mobilization and reduces the probability of a high specific tension and thus of adequate behavior. At the same time, the relation is not unequivocal because some individuals may have so much energy at their disposal that even with high general tension there will be enough left over to maintain adequate action.

Up to this point, our use of the term 'energy' has been quite general and was meant to cover 'physical' as well as 'mental' energy. Now we might suggest that we have a fairly reliable indicator of the amount of energy available to the individual for this particular task (shorthand writing) in our intelligence scores which sample the energy directed toward the locus of mental work, that is the manipulation of symbols. Without going into an unprofitable discussion as to what intelligence is, we might point out that it is manifested much as we would expect it to be on the basis of our scheme. An intelligence test forces the individual to a specialization of tension, 'attention,' and to the most effective energy mobilization. Thus it represents a sample of the way in which an individual manipulates symbols and of his speed in doing it

which would give us an indication of the amount of energy he can make available and the efficiency of its distribution.

If this is so, we would expect an individual of high intelligence to be able to cope with a situation even if his general tension is high, for enough energy is available to maintain adequate specific tension also. The significant inverse relation of breakdown and intelligence in our experiment (*r BI*—.57) would mean, therefore, that high energy, no matter what its distribution, would on the whole be able to maintain adequate behavior. If the energy distribution is held constant by partialling out left pressure, this relation becomes accentuated (*r BIL*—.64). Finally, if skill too is held constant by partialling out shorthand performance before breakdown, the inverse relation between intelligence and breakdown becomes very significant indeed (*r BIPL*—.84).

As a practical suggestion in relation with our experiment we might mention that the emphasis on speed, so prevalent in our commercial schools, may result in a decrease rather than an increase in efficiency and thus defeat its own purpose. If the special skill required is not yet well developed and the student has not sufficient ability to compensate for his deficiency, the subsequent cumulative increase in general tension will foster a mode of reaction which not only will be detrimental to the student's efficiency but also to his mental health.

4. DIFFERENTIAL TENSION RELATED TO PREVIOUS FINDINGS

But before an interpretation is acceptable even as a suggestion, it would have to be tested against previously reported findings. Looking back over our historical review we now can explain first of all the contradictory reports that tension is sometimes a 'facilitator' and sometimes an 'inhibitor,' and that tension scores are sometimes directly, sometimes inversely related to achievement. Specific tension according to our scheme would be favorable to achievement, general tension unfavorable. Thus whenever specific tension is measured we would expect a direct relation to achievement, and an inverse one if general tension is measured. This assumption holds good for all experiments reviewed. To quote only a few, Freeman found an inverse relation measuring tension in the right quadriceps muscle while the right hand was engaged in the task; but he found a direct relation by measuring induced tension close to the working hand.¹⁴ Duffy found an inverse relation between tension and teachers' rating in excitability and school adjustment, by measuring grip pressure during discrimination tasks.¹⁵

Induced tension could be said to represent an increase of *effort* if it is voluntary, and an increase of *energy requirements* if artificial. Thus in experiments with induced tension the individual's energy output is forcibly raised, and we would expect that a short period of increased output would be followed by a disorganization of behavior more quickly in a more exacting task. The reported results entirely confirm our expectation, for facilitation is found in simple tasks which induced tension,¹⁶ and inhibition in difficult situations where the energy requirements are greater.¹⁷

¹⁴ G. L. Freeman, see *op. cit.*, notes 3 and 5 above.

¹⁵ E. Duffy, see *op. cit.*, note 7 above.

¹⁶ A. G. Bills, see *op. cit.*, note 1 above.

¹⁷ G. L. Freeman, see *op. cit.*, note 4 above.

Finally, our hypothesis allows us to discard the terms *facilitation* and *inhibition* altogether. Their place is taken by our 'concept' of differential tension which allows us to account for the total amount of energy available in an organism without having to leave some of it aside for purposes of inhibition, as seems to be necessary in any theory of inhibition or repression. Muscle tension is neither facilitative nor inhibitory to we know not what, but simply the organism's means of action.

While it would be decidedly premature to generalize on the basis of our experiment, we believe the trends revealed to be genuine and the hypothesis proposed workable; and future investigations should do much to consolidate our 'concepts'.

GENERAL SEMANTICS IN VISION AND VISUAL RESEARCH

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General semantics as formulated by Alfred Korzybski and the study of vision are inseparable. Both are concerned with the orientation and adaptation of the individual in his exceedingly complex environment.

Each individual carries about with him, within his nervous system, a picture of the world in which our bodies move about encountering the shocks and thrills that constitute existence; and each individual actually orients himself by that pictorial world-of-his-own which he constructs for himself within himself. This little individual world-of-his-own in which each one of us actually lives consists of what each individual feels and believes the world-at-large to be. It is made up of sensations, occurring within the body as the result of recognized and unrecognized physical contacts between the body and the world-at-large, cemented together by evaluation and rationalization. On the one hand the validity of the world within is determined by the quantity and quality of materials supplied through recognized and unrecognized sensations; and on the other hand by the architectural skill of 'reason'. Upon the validity of the world-of-his-own depends the security of the individual in the world-at-large.

It is generally roughly estimated that the sensations of sight provide about eighty percent of the recognized contacts between the individual and his external environment. Eighty percent of the material used in the construction of the 'world-in-which-I-live' consists of the world-at-large 'as-I-have-seen-it'. The shape and form of this 'world-of-mine' is the result of conscious and principally unconscious application or mis-application of general semantics in the selection and fitting together of materials.

Vision is not merely the recording of retinal sensations in the archives of memory. Visual sensations are selected, accepted, rejected and modified by contemporary and prior factors most of which exhibit evaluational characteristics. There is a very strong natural tendency to see things as we believe them to be. Material for building this 'world-of-my-own' in which the individual lives may be rejected, its very existence denied, if the 'architect' of what-he-believes can find no place for it in the design which he has approved and accepted. Although imaged upon the retina day after day, we may fail to see the lines of age in faces which we do not want to grow old in the 'world-where-I-live'; and I personally have been accused of being unable to see dirt in the corner where cleaning might disturb my papers.

Unfortunately, sooner or later, sensations arising from unforeseen harsh contacts with the world-at-large force house-cleaning and sometimes extensive remodeling of this 'world-of-my-own'. Serious shocks may be averted by general semantics training in consciousness of abstracting, preventing the acceptance of unmodified retinal images, with the consequent constant revision of the pictorial world within the nervous system. Such training provides immediate rewards as well as future protection from shocks. The aspects of the world at large change constantly. The 'architect' of this 'world-of-

my-own' should be trained to keep pace with external changes so that we may live constantly in a world of today. Those individuals who are credited with being especially alert are merely those who by expecting change are able to see changes. Those who are credited with having 'photographic memories' are merely those who live in a changing rather than in a static world. Expecting change they 'recognize' in spite of changes.

Such individuals, who are sometimes considered exceptionally endowed (and perhaps they are), have no greater gift than is bestowed upon one who applies general semantics to seeing. Seeing, including even the muscular adjustments which turn the eyes, regulate the amount of light admitted through the pupils, and focus some of that light upon the retina, is a matter of attention and interest.

We can not see everything at once. We 'see' only one thing at a time. It may be surprising to discover what an extremely limited area commands visual attention at a given moment. For instance, if we hold a 'liberty quarter' at the ordinary reading distance and fix our gaze, center our visual attention, on the tip of George Washington's ear, we will find ourselves unable to read the date or the declaration of trust, and we can recognize only a few of the letters in the word 'liberty'. When we believe we see the whole quarter at a single glance, do we? If that same quarter were passed before our eyes while we were watching a pretty girl brush her hair I doubt that we would be aware of its passing. When we believe we see 'all' that goes on around us, do we?

The eyes move with considerable speed and precision. They are adjusted to picture upon the *fovea centralis*, the sensitive center of the retina, only those items in the world-at-large which capture our attention and hold interest for us; only those items which the 'architect' of our individual inner world considers suitable material for our dwelling place. If ours be a static world, we see but little. On the other hand, if through the methods of general semantics we contract with our 'architect' for a dynamic world-of-our-own, constantly in close harmony with the continuously changing world-at-large, we will find ourselves interested in many things, even in change itself, and will see much. Let us try this exercise. Each morning when we open our eyes, suppose we say to ourselves: 'This is the light of a new world. Nothing in this world of today is as it was in the world of yesterday. I must see what changes have been made. I must make each new thing a part of the world in which I live.'

Vision, seeing, is not only a precious endowment, it is a skill. Each individual *learns to see*. The process of learning to see is beset by all the pitfalls of poor technique common to all learning. We see the stumbles while the child is learning to walk, we see the 'slice' and the 'hook' when a man is learning to drive a golf ball; but unfortunately we can neither see nor hear the mistakes and fumbles of the infant learning to see. Still more unfortunate, the pupil himself can not see, can not feel, can not even guess the differences between his own seeing and that of an expert. During the period in which he learns to see he becomes aware only of consequences of his mistakes in seeing, not of the mistakes themselves. Later in life, through the processes of explanation and education, he may discover that his visual skills are inadequate; but by then he has learned to see in his own way and it may be difficult to convince him that there is a better way, worth the trouble of learning.

In such cases the optometrist (who is the specialist in the study of visual per-

formance and the development of visual skills) encounters a semantic blockage requiring all that general semantics can provide to establish communication between himself and the patient, and between the patient and the world-as-it-is; but this is not the place to discuss the manifold specific applications of general semantics in the practice of optometry.

Learning to see consists of learning to interpret, to translate retinal images into parts of the inner world of values. The sense of touch and kinesthesia are the tutors of vision. Seeing is not believing. Were we to walk through an apparently empty room and in the middle of that room feel the contact of a cold hand upon our cheek, which would we believe, sight or touch? Seeing three dimensional forms in the common stereoscope where our fingers feel only a smooth surface, which do we believe, sight or touch? We learn to believe what we see only to the extent that sight sensations are re-inforced by touch and muscle-sense, present or remembered. The baby pulling his own toes and reaching for the moon is learning to see, learning to translate visual sensations into tactile and kinesthetic values.

Retinal images are never perfectly formed. The human eye is a marvelously adaptable optical device, but it is not a good camera and does not form accurate camera-like images. The normal neurological and psycho-logical processes translate normally distorted retinal images into values with high speed and amazing fidelity. The same processes do an even more amazing job of translating abnormally distorted images. However, this translation requires attention. Visual efficiency is impaired when so much attention is required for the means of seeing that attention is diverted from the value of the thing seen. Vision can be improved through training in spite of subnormal optical conditions of the eye, but by far the better and more permanent results are enjoyed when training is combined with optical correction of optical defects. The better the optical image the more quickly and more correctly it can be interpreted with a minimum of attention. Reducing the extent of the muscular adjustments required for forming the image of the object attended extends the range of object-attention. In short, the easier and better our eyes may be adjusted for seeing, the more we can see; and the more we really see, the more nearly complete is that world-of-our-own in which we live.

The word *redintegration* is used in psychology to express the evoking of a series of responses by only a part of the original adequate stimulus. It is used in discussions of reading to express the recognition of a whole word or complete phrase from actual vision of a small part, a mere clue to the whole. By visual redintegration I wish to express the attending to a complete object or group of objects in the pictorial world of the nervous system as the result of visual sensations arising from a few clues or a single aspect of an object or group of objects in the world-at-large.

Visual redintegration is the common way of seeing. At the first introduction to something new in the world-at-large we actually see a great deal of it. We not only give visual attention to several aspects and many details of it, if possible we touch it, smell it, hear it and taste it. An image of this new thing as it is at the time of introduction is set up as a part of the personal inner world. Thereafter a glimpse of one aspect of this thing in the world-at-large is sufficient to bring the whole inner world picture of that thing to attention. From the glimpse of 'reality', by visual redintegra-

tion we see the whole thing as it was when we last really investigated it and made it a part of our inner world.

Unrecognized and unregulated visual redintegration constitutes a form of identification and invites shock; but recognized, trained and controlled visual redintegration is extremely valuable. It permits an almost instantaneous inventory of one's surroundings in emergency. Properly supported by the exercise previously described so that the inner responses are reasonably up-to-date, visual redintegration increases the margin of safety and saves time which may then be employed in investigating changes. In short, visual redintegration should, through consciousness of its mechanism, be made a visual aid to be used when needed and to be laid aside when other visual expedients can be used to better advantage. It is most easily recognized as of value in reading where it permits of extremely rapid reading with a high degree of comprehension, but it must be recognized for the 'tool' that it is and used in proper places.

So-called 'eye-strain' or ocular discomfort is probably that visual problem most readily approached through general semantics because it now appears to be a slight neurotic symptom brought on by frustration. Of course I do not intend to include the pains and distress attending diseases of the eye in the term *eye-strain*. I have reference to the headaches, nervousness and distress which so many suffer as a necessary evil when there are things to be seen, either because they refuse to wear glasses or because they have been unfortunately served.

'Eye-strain' discomfort occurs when optical conditions of the eyes or of their environment require a variety of adaptations so complex that improvement in one respect makes matters worse in other respects. Some individuals sacrifice efficiency and 'meaning' for the sake of comfort. Under the same unfavorable circumstances, those who maintain visual efficiency and comprehension pay the price of discomfort arising from constant frustration in attempts at better adaptations to the visual task.

The major factor in 'eye-strain' is the recently acquired, exclusively human, highly advantageous trick of using the two eyes as a single unit. All creatures, including man, readily ignore the visual sensations arising from one eye and give full attention to the images of the other eye when the two sets of sensations are incompatible; and especially when only one set of visual sensations are compatible with tactile sensations.

Man appears to be the only creature in which are combined, (a) both eyes in the front of the head so that it is physically possible to direct both lines of vision toward the same point in space; (b) thumbs and fingers so formed that he can hold tools; and (c) the cortical development to appreciate the advantages afforded by this combination of possibilities. Binocular single vision permits the instantaneous and precise perception of three dimensional forms and location even when both observer and observed are motionless. Facile fingers and tools enable man to construct and shape objects in three dimensional forms. Intelligence urges him to persist in the practice of these skills, each of which reinforces the other, in spite of obstacles of imperfect structure which engender discomfort.

Monocular (one-eye-at-a-time) single vision is predominantly comfortable vision. Binocular (both-eyes-at-the-same-time) single vision is uncomfortable unless the two eyes are precisely co-ordinated and the two functions, focussing and converging the

lines of vision, respond in close harmony to the urge to see. Relatively few persons enjoy such perfect symmetry of structure that they continuously maintain maximum human visual efficiency without discomfort.

If it is now clear that close co-ordination of sight and touch has been and is now largely responsible for the exclusively human achievements in visual performance, then it should be immediately appreciated that the very visual tasks which demand the peak of efficiency in human visual performance do not contribute to the establishment of these binocular skills. Primitive man explored nearby three dimensional objects with hands and eyes working in unison. Modern conventional tasks such as typing, comptometry operation and many others require that hands be operating in one field, usually with three dimensional objects, while the eyes operate in another field, frequently with two dimensional forms, yet the two operations must synchronize. It reminds one of the old childhood trick of rubbing the top of the head with a circular motion of one hand while patting the tummy with the other hand. It can be done but it requires careful training and constant practice. The same is true of modern conventional visual tasks. They can be done. They are done. But they do not of themselves contribute to the basic binocular co-ordination essential to the highest type of visual skills. These basic habits of binocular co-ordination must be firmly established by primitive visual-tactile experiences during preschool-age childhood, and reinforced during the recreation hours throughout life, or from time to time they must be reestablished and reinforced by the visual didactics of optometry.

Basically these are problems which respond to the methods and devices of general semantics. When the mechanisms are understood, they may be brought under control and directed. Valid orientation resulting from the application of general semantics provides a sound 'world-of-my-own' for the individual; and he then does not have semantic blockages which prevent his seeing many things in the range of his vision. An orientation by facts, and therefore interest in the facts we see, begets precise ocular functioning. Precise ocular function permits better seeing. Better seeing keeps the inner 'world-of-my-own' up to date; and the cycle is complete.

This paper has been directed toward the student of general semantics regardless of individual special interest. All who have two eyes need to know something of the mechanism of binocular human vision. But, as the title indicates, it is especially desirable that the factors here presented be given consideration by those who engage in research—any kind of research, but in particular research having visual implications such as reading and reading-readiness researches, and researches in vocational aptitudes. The researcher is essentially a reporter of things he sees or believes he sees. Certainly he should understand something of the mechanisms of visual performance; first, that he may not fail to see; second, that he may properly evaluate his own visual abstractions.

Researchers in the fields of visual performance and in those fields where visual factors are found have frequently made mistakes traceable to ignorance of general semantics in vision; such as, for example, identifying the living human eye with the inanimate photographic camera. I therefore feel justified in contending that such researchers should be students of general semantics. This seems especially desirable in view of the admitted probability that vision is the principal vehicle of communication between the world-at-large and the 'world-of-my-own' of the average individual.

SEMANTOGENESIS AND CONTROL OF DENTAL CARIES*

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'Knowledge' of dental caries (1941) is available in a summarized form¹ and is also indexed annually by some of the leading dental journals. Dental literature to date still exhibits a search for 'The Cause' of dental decay—a saddening fact and an example of elementalism, dating from the days of Aristotle when coagulated organs taken from a corpse were studied detached from their living environment, and function was not taken into account. Statements were studied stripped of context, plants and people were isolated from their environment, studied, and then generalizations were formulated; a world of isolated 'objects' became postulated, 'processes' were disregarded. In science 'function' was ignored; 'knowledge' was pigeon-holed, uncorrelated. The 'map' did not represent the 'territory'. Now, as 'everyone knows,' a disease process—acute gall-bladder disease for instance—is really like a fast moving train and we may have to run up and step on if we are to deal with it. It is not the nice 'object' sort of thing described as a disease entity in the textbooks.

A process orientation becomes necessary unless our 'understanding' of subjects like rampant dental caries is to become seriously delusional in character. We still talk, write, and so must 'think', in terms of 'The Cause'. It is not necessary, however, to have a cause for every effect. To ask whether lightning causes thunder or thunder lightning, is to misunderstand the problem. We must study the 'process'—as a whole. To speak about 'The Cause' of dental decay is to assume a single cause—whereupon everyone begins furiously to hunt for it. Naturally, the results are disappointing. The single-cause premise and one-to-one cause-effect ratio turn out to be false-to-fact and unworkable. Why retain such postulates? We fail to recognize the process, to see what is actually going on, just as one might by an 'object' orientation, believe that an electric fan in action was a disk. Similarly the word *cloud* implying a 'thing' or object, actually represents moving particles of water, carbon, etc.—electrified, dispersed, suspended, etc.

How easily and profoundly does a president of our dental association, or any one of us, discourse upon 'The Cause' of dental caries, petting the profession for its progress in hunting for 'it'. Metaphysics will not aid dentistry in this problem.² We have failed

* An application of general semantics and the non-aristotelian system as formulated by Alfred Korzybski and expounded in his seminar lectures at the Institute of General Semantics. For explication of the leading terms and formulations of general semantics as used in this paper, see Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

This paper in extended form was first presented at the Congress. An abridgement by the author appeared in the October, 1941, issue of *Dental Items of Interest*, LXIII, 10. The present version of the abridgement represents certain editorial emendations of methodological formulations, etc.

¹ See *Dental Caries* (Second edition; Chicago: American Dental Association, 1941).

² Arthur A. Libby, 'Emotions: Their Effect on the Dental Machine and Their Control,' *Harvard Dental Record*, XII (January, 1938), 1.

to recognize the process. Our premises contain factors of traditional metaphysics, anthropomorphic symbolism of which we are unaware, having used them for so long; too few factors have been taken into consideration and these have been studied too elementalistically.

Two of the most verbalized and popular factors in dental caries, taken elementalistically, are perhaps 'diet' and 'acid-base imbalance'. These become important when related to other factors and should not be disregarded.³ The problem of getting this dietary 'knowledge' applied, however, is not a small one.

The present writer recently had a case of rampant caries—a boy whose father frequently scolded him at mealtime. The boy simply developed the habit of leaving the table quietly and purchasing a Baby-Ruth candy bar. One selects a stalk of celery or a candy bar according to one's *evaluations* and our evaluations are dependent upon the neuro-linguistic and the neuro-semantic factors in our environment. Predictability becomes the test for proper evaluation: a map-territory relation. 'Novocaine poisons me,' 'I hate dentists,' 'My teeth are so soft,' represent some of the environmental neuro-linguistic and neuro-semantic blockages to proper evaluation for promotion of dental health. In the case of the boy above cited, the writer simply separated the father from his son at mealtime until the busy father learned to control his temper.

Prolonged neuro-muscular tensions of the sort set up in this boy not only impair digestion but decrease the parotid secretion; this has been shown to increase its acidity. The immediate effect of a semantogenic upset with an increase both of the flow and alkalinity of saliva has been demonstrated,⁴ but prolonged disturbances of this sort, e.g. anxiety, bring about a decrease in flow and increased acidity.⁵ This boy's 'acidity' would presumably be further increased by his substitution of sugar in place of the diet prescribed by his physician—in compensation, it may be postulated, for the unpleasantness at the table. It seems also appropriate to call attention here to the possible dental consequences of 'eating for pastime'—a common practice, indeed now a social institution at most preparatory schools and colleges. The sipping of sodas at our fashionable educational institutions may be expected to effect changes in the types of bacilli to be found in the oral flora and to become as detrimental to the teeth as the practice may be commendable from a social point of view. Such life factors are commonly disregarded. We administer dietary dogmas and nothing happens. At Bradford Junior College, two hundred girls use a Coca-Cola dispenser holding four hundred bottles. It is filled three times a day. The consequences have not been scientifically investigated. Can we disregard such factors in our work? Much more of this presumably 'harmless' beverage is used in southern college communities. The writer merely points out a relation of sweetened caffein-citrate to the colloids of the human nervous-system, upon which we depend for our evaluations and dental health.

Casual observations made among primitive races and the opinion of one investi-

³ Phillip Jay, 'The Rôle of Sugar in the Etiology of Dental Caries,' *Journal of the American Dental Association*, XXVII, No. 3, p. 393.

⁴ Demonstrated in the clinic, 'General Semantics and Control of Rampant Dental Caries,' last presented at the Five State Postgraduate Clinics Meeting of the District of Columbia Dental Society, Washington, D. C., 1941.

⁵ A. L. Winsor and Barney Korchin, 'The Effect of Different Types of Stimulation upon the pH of Human Parotid Secretion,' *Journal of Experimental Psychology*, XXIII (July, 1938), 62.

gator⁶ would lead us to assume that a high immunity to dental caries was established and maintained by an adequate selection of foods. Again the reader should be forewarned that the 'adequacy' of the food selection will be dependent upon the individual evaluating mechanisms in the nervous system of the selector. If evaluations are made by an infantile adult, it may be expected that a candy bar will be selected or other inadequate foods chosen from sense perception 'without thinking'. The nutritions studied by the above observer differed in accord with latitude and altitude and the 'controlling factors' in the environment. These necessarily include the neuro-linguistic and neuro-semantic characteristics of the environment such as 'children must have some sugar' and 'Eat Bird's Devil-Kakes for Health,' also the evaluational reactions present in the nervous system of the individual. Consider, for instance, the 'Saturday-Night' methods and customs of selecting foods which we observe in small New England or Mid-Western villages which are rural centers for the isolated inhabitants of that region. Consideration of the taboos, traditions or dogmas, etc., in actual practice help us to 'understand' the discrepancy between our accumulation of modern scientific 'knowledge' and the actual 'what happens' in application, after the patient gets beyond the door of the office. The mineral and vitamin content of the nutritions of the primitive races studied by the above investigator were relatively much higher than those provided by the foods of modern commerce. These mineral and vitamin factors in diet must not be overlooked.⁷

The consequences of an inadequate diet not only involve orthodontia problems, in addition to caries, but also involve lowered reproductive capacity. At least, this has been pointed out as possible. 'Acidity' and gonadal activity, it is postulated, is a relation which may account for impotence, frigidity, etc. Acidity variations in one's blood of more than two tenths a pH unit may result in a corpse; acidity of the saliva can vary much more than in the blood without apparent consequences. How glibly we talk of 'acidity'; few serious investigations have been made.*

⁶ Weston A. Price, 'Light from Primitive Races on Modern Degeneration,' *Dental Items of Interest*, May-June, 1940.

⁷ Percy R. Howe, Otto A. Bessey and Ruth L. White, 'Practical Nutritional Suggestions for Dentists,' *Journal of the American Dental Association*, XXVIII, No. 7, p. 1089.

*The writer's personal orientation to the problem concerning dental caries (1942) might be summarized as follows. Calcium, while an outstandingly protective factor with an alkalinizing effect immunizing against caries of the teeth, cannot be dealt with more effectively than by direct dealing with the evaluations of our patients. Therapeutic doses of calcium lactate is a relatively absurd treatment to maintain indefinitely while proper evaluation is not.

Calcium probably holds the cherished balance unless the organism is so disturbed as to retard this factor, permitting acidity to predominate. In the cases where food seems to control dental caries, it may be pointed out that an adequate diet promotes complacency of the entire organism. An arrest of dental caries resulted in four of the writer's cases following the dietary recommendations of Dr. Paul H. Belding of Waucoma, Iowa. It was necessary, however, to first deal with the evaluations of those patients before the dietary instruction sheet was utilized at all. Further investigation of this calcium factor is encouraged; very important and excellent material is to be found in Leonard S. Fosdick, 'The Etiology and Control of Dental Caries,' *Journal of the American Dental Association*, XXIX (December, 1942), 2132; and in Isaac Schour, 'Calcium Metabolism and the Teeth,' *Journal of the American Medical Association*, CX (March 19, 1938), 870 ff.

While calcium metabolism and parathyroid function are matters which we must definitely deal with in obtaining control of dental caries, this is not to be understood as indicating that we are 'to take sides with' this or that therapeutic 'school', such as 'the germ theory'

We need not stress further the importance of 'diet' as a factor to take into account and relate to other factors in our study of dental caries. Our present 'knowledge' of this factor is grossly beyond our actual application in practice because of the evaluational reactions in our patients. Because of the aristotelian, newtonian, and euclidean limitations in our education to date, we deal only with an 'object' patient—a false-to-fact assumption. Our patient is a complicated, dynamic, electro-colloidal *process* at the very least. One dentist, recently instructing students at a large eastern university, wrote the writer that he still prefers to see 'Man' as a 'Spiritual Being following the First Great Commandment'. As an effort to clarify dental science this view seems likely to block our evaluations by a sort of colloidal embolus. The issue is too serious for verbal play; 1941 dental science postulates *extensional* data⁸ such as, 'Smith₁ exhibits dental caries,' and if we are following this 'Spiritual Being' endeavouring to see his 'auras'⁹ there may be real danger of hampering the progress of our efforts to control 'disease' rampant-carries for another generation or two. To solve any problem, the problem must first be faced. When a patient is instructed to eliminate the carbohydrates from his diet for two weeks, what percentage of carbohydrate actually is taken out? Rationalizations such as, 'The poor man was so weak and hungry that I thought cereal and some of that real hard bread would do no harm' illustrate the difficulty which we have in applying what we know. The patient is also deceived by the foods of modern commerce and the attendant infantile advertising of them. Delusional factors in evaluation are necessarily present in a society which employs Fairy Tales and Mickey Mouse to compensate for the values withheld from its food-stuffs. Anthropologically, this is an infantile phase which we must outgrow. Furthermore, our patient does not investigate, due to his signal (not symbol) reactions, which of course are promoted by modern commercial advertising. Such factors are completely disregarded in his food selection, however much he may say he 'knows' about it. In fact he may even enter into some verbalism as to whether 'X's Devil Cakes' have more vitamin B₂ than 'Y's Chocolate Dogs'—sad to witness when valuable fruits, meats, and vegetables lie on the same counter before him. Our difficulty in evaluating and applying what we already 'know' may be found to be at the bottom of our trouble with our teeth.

While accumulating factors prior to relating and evaluating them, let us consider that popular 'acid-base imbalance'—so elementalistic and somehow profoundly impress-

or 'the acid theory', etc. But it does indicate that we are to gain access to the more fundamental, general, evaluating mechanisms in our patients. These should be dealt with directly to insure that the specific therapeutics administered will be followed where this approach is desired as a 'surgical' measure. By restoring interco-ordination of the entire organism in a functional way through improved evaluating reactions, our administrations will have a lasting beneficial effect upon the teeth.

⁸ Extensional method consists in dealing structurally with many *definite individuals*; as for instance, with 1, 2, 3, a series in which each individual has a special and *unique* name or symbol. By *intension*, 'Man' could be described as a featherless biped which would apply to all but cover none. By *extension*, 'Man' becomes a series of unique individuals, Smith₁, Smith₂, Smith₃, etc., the differences being represented by the differences (due to indexing) in the symbols. Extension implies *order*. The validity of generalizations depends upon the use of *extensional* method—facts *before* the labels. This method is in accordance with the structure of our nervous system as established by survival. Intensional methods disorganize this normal mode of activity of the human nervous system. See Korzybski, *Science and Sanity*, index.

⁹ Libby, *op. cit.*

ing although not structurally clear. It is well known to farmers that if their fields are not kept well fertilized, are allowed to 'run out' or to become 'sour', there will be danger of a certain vegetative nuisance creeping in—let us say, for example, the well known 'devil's paint-brush', that small reddish daisy-like growth. Cattle would perish and the entire farm-structure, as far as function is concerned, would be impaired if this could not be controlled. Fortunately, as with the lice on hens, we have some specialists in Washington capable of looking after *this*. Turning our attention to the vegetative bacterial growths in the oral flora, we may find a similar nuisance if conditions are favorable—the lactobacillus and streptococcus. These organisms are now known to be fundamental in the process of dental caries.¹⁰ The saliva is their culture-medium and carbohydrates favor their maintenance in the oral flora.¹¹ The relation of acidity to these organisms has not yet been properly investigated due to carelessness in the methods of collection, etc.; however, the relation of carbohydrates to lactobacillus and streptococcus has been established, and the relation of carbohydrates to 'acidity' and acute infections has long been known and this 'knowledge' utilized in daily hospital routine practice. The present data on pH as related to lactobacillus involve these fallacies: not collecting the material directly from the glands; injuring the ducts if this has been attempted; and not co-ordinating the pH with electro-conductivity.

The neuro-semantic factors present in the patient's environment likewise affect acidity. The writer has experimentally varied the salivary pH from 6.94 to 7.50 in a few seconds by neuro-semantic disturbance during a clinic. On the electro-colloidal process levels of living tissues, this becomes serious and should be investigated. Signal reactions, the undelayed reactions common to animals (Pavlov's bell-saliva reflexes in dogs, etc.) and common to infantile-adult humans, are the reactions which may cause you to secrete when a word is spoken. In doing this you confuse or identify the word with that which it symbolizes for you; this exhibits your evaluation of the abstract symbol as identical with that which it represents. On the human level, this is not necessary and in fact is harmful due to its disorganizing effect. The word *apple* does not give you the vitamins, minerals, etc., necessary for survival and can not be eaten; why then start the digestive process?¹² Secretions follow evaluation. Completely-adult human reactions may be called symbol reactions and they involve more appropriate evaluation than signal reactions which are adequate for simple animal forms of life. Consider whether salivation to the word 'apple-pie' or to the *process* represented by the label 'apple-pie' would be better evaluation. The writer has among his patients a young woman in her third year of college who salivated freely when the above symbol was spoken; in fact she reacts over-acutely to words and appears dull and rather insensitive to the non-verbal facts of life which she is actually up against. She is quite

¹⁰ S. F. Bradel and J. R. Blayney, 'Clinical and Bacteriologic Studies on Dental Caries,' *Journal of the American Dental Association*, XXVII (October, 1940), 1601.

P. H. and L. J. Belding, 'Alterations in the Morphology and the Reaction Capacity of Streptococcus Salivarius,' *Dental Items of Interest*, May, 1940.

¹¹ See Phillip Jay, *op. cit.*

¹² Sub-human, animalistic evaluation is the result of undelayed reactions. Energy does not reach the cerebral cortex, which in humans should be well developed after the age of about eighteen years. The function of the cerebral cortex, besides its dynamogenic effect, is one of differential activation. This is necessary for adjustment and proper evaluation on the human level. See Korzybski, *Science and Sanity*.

unaware of food-debris left on her teeth, Vincent's infection, etc. She does not exhibit evaluational reactions which are mature yet can glibly recite in a scholarly, formal way much that she has 'learned' at college. Her Vincent's infection did not respond well to treatment, until her evaluations were improved.

The 'signal' of an animal's experience becomes a 'symbol' to adult humans and reactions become modified by a factor of flexibility in choice because many 'meanings' and possible interpretations are taken into account, etc. Humans have more layers of cerebral cortex than animals. This structural difference accounts for human survival capacities, speech, increased adjustment possibilities, etc. *Differences* are factual and *similarities* are derived from disregarding differences. Similarities are therefore abstractions from the total; the word *apple* not only can not be eaten but it labels (unless indexed and dated) all objects which could come under the classification 'apple', last year's rotted ones and all. As in chemistry (H_2O is *not* H_2O_2) we cannot afford to disregard differences. A symbol reaction (human) is not a signal reaction (animal reflex). Not only salivation but parathyroid, pituitary and other glandular functions are most seriously dependent upon our evaluations and types of reactions. We already know something of the consequences.

At a meeting of dentists recently, non-delusional evaluation and preventive methods were being taught at a table clinic. A Beckman electron-tube pH meter (acidimeter) was employed among other instruments, and acute evaluational upsets involving the pathologic phenomena of identification (disregard for differences, etc.) demonstrated a change in the salivary pH. This was done by the following procedure. After training the men about the table for an hour or two, the clinician asked a new member to join the group. His saliva sample was placed in the meter and a reading of 6.94 noted. Then, affecting to be tired, the clinician requested a match from his assistant in order to light his cigarette. In passing the match packet, the young lady dropped it. Pretending to become very angry, to 'lose his temper', the clinician symbolically slapped her (actually, ever so gently).^{*} Those who had been at the table for some time and whose reactions had changed, for the time being at least, from signal reactions to symbol reactions, simply saw what they saw; they did not identify the seen facts with their judgments, dogmas, etc. They did not reach conclusions without further investigation. However, the new fellow, the 'average man' let us say, began to perspire. He trembled slightly. His cerebral cortex function was colloiddally blocked by his dogmas. He had identified what he had seen with his taboos, creeds, etc., about what he had seen. Dogmas came into play and he did not take other possibilities into account, such as that this might be a prearranged experiment. He exhibited undelayed, *signal* reactions; his saliva flowed freely. It became more alkaline. *Prolonged* stress of this sort would eventually decrease the flow and it would then become more acid. His changed from a pH of 6.94 to a pH of 7.50. Such neuro-semantic upsets (effect of 'meanings' on the colloids of the human nervous system) affect the saliva chemistry, activity, etc. Would the above reaction have taken place were the assistant a man? True, the above over-simplified demonstration was intended merely to encourage investigation, to turn the interest of dental scientists to serious consideration of the colloid-function levels

^{*} Students of Korzybski will recognize this as his well known 'slap-girl' demonstration to illustrate organismic identification, etc., which is reported in his paper 'General Semantics, Psychiatry, Psychotherapy and Prevention,' *American Journal of Psychiatry*, XCVIII (September, 1941), 203-214.

of the problem with which we are actually confronted, to illuminate some of the less obvious factors which we neglect and which may have a bearing upon the fundamental dissatisfaction with our results.

Fundamental dissatisfaction with the decaying of our teeth does exist. We have studied 'diet', 'acid-base imbalance', bacteria, evaluational reactions of the patient, pH of the saliva, vitamins, etc., and in so doing we have gathered much information about these really important factors. But, in studying these elementalistically, unrelatedly, we have not taken function, interplay of the dynamic factors, etc., into consideration. The premises may turn out to be more than adequate to solve our problem but the factors are not properly related. They are isolated from each other; functional formulations become therefore impossible. We are dealing with a dynamic electron-process type of structure and our symbolizations must be of similar pattern-structure to represent it; otherwise, we are led astray. The non-verbal facts of life are that you eat celery or an avacado pear in preference to a 'Baby-Ruth' in accordance with your particular 'organismal-intellectual' evaluation—some evaluational reactions being too 'organismal', some too 'intellectual', and some well-integrated. *Secretion*, and eventually dental *structures*, depend upon those evaluations. The fundamental importance of evaluation seems to have been overlooked in dealing closely with isolated factors. The science of general semantics which studies word-fact relations as differentiated from the study of word-word relations (logic), or fact-fact relations (as in science), emphasizes 'map-territory' integration and the necessity of similarity of structure—a body-mind integration; it deals with the problems of *evaluation*. The fundamental character of this problem to our work is to be stressed. Evaluation involves the investigation and the interrelation of all possible factors which we are able to gather before we make generalizations. Semantogenic factors have not been considered in dentistry until now.

We might consider for a moment some of the colloido-chemical mechanisms which we deal with, often unconsciously. If you have any difficulty in visualizing what is meant by 'colloidal phenomena' then turn your attention for a moment to the smoke coming from your cigarette. Remember this cloud is not an 'object' but a dynamic, electro-colloidal *process*—small pieces of carbon, each similarly charged with electricity upon the surface and so each repelled from its neighbor, until a suspension of these fine carbon particles takes place in the air. Milk, likewise, might exemplify a colloidal suspension of small fat particles in an aqueous medium. When milk 'sours', you know of the changes which you see and taste. 'Colloidal phenomena' might be visualized by some such process.

The casual reader may prefer to omit the next few paragraphs, which are necessarily rather technical and are intended to show that we often forget a great deal of valuable 'knowledge,' and to point out the underlying colloido-chemical *process* character of our problem.¹³

Dr. Jacques Loeb of the Rockefeller Institute for Medical Research reported in *Science* (November 12, 1920), that colloid gelatin and proteins generally, exist in

¹³ See Jerome Alexander, *Colloid Chemistry* (11 vols.; New York: The Chemical Catalog Company, Inc., 1926-1928), also L. V. Heilbrunn, *The Colloid Chemistry of Proto-plasm*. (Berlin: Verlag von Gebrüder Bornträger, 1928).

three states defined by their *hydrogen-ion* concentration, the symbol for which is pH. At one concentration (for gelatin pH 4.7), the protein is unable to combine with either cation or anion of an electrolyte. This is termed the non-ionogenetic or isoelectric point. At concentrations below pH 4.7, gelatin will combine with anions or acid radicals only, while at concentrations above 4.7, it combines with metals forming a metal gelatin.

When a protein is in a salt solution, e.g. sodium chloride, it will combine with sodium forming sodium proteinate as soon as the pH is higher than the isoelectric point of the protein; when, however, the pH falls below that of the isoelectric point of the protein, the sodium is given off and protein chloride is formed. Humans are often troubled with a calcareous deposit on their teeth, especially, opposite the gland ducts. Based upon Dr. Loeb's work, a hypothesis was formulated that when salivary proteins (as mucin) are present in a solution containing CaHPO_4 , saliva, they will combine with the calcium at the pH of healthy, 'normal' (7.2) saliva and produce the 'protective colloid' which prevents the precipitation of $\text{Ca}_3(\text{PO}_4)_2$, long known as 'tartar'. When the action of this protective colloid is disturbed by an increased pH, the acid character of the calcium salts causes a union with the alkali and 3CaHPO_4 becomes an alkaline phosphate and a trimetalic lime-salt, which is deposited.

The action of the protective colloid is not a theory but a well established fact of physiological chemistry. The presence of $\text{Ca}_3(\text{PO}_4)_2$ in tartar is likewise a well established fact. It is the *isoelectric point* of the salivary proteins which should not be disregarded. There are other factors in the production of tartar such as the well known chemical action of carbon dioxide in holding lime-salts in solution and their subsequent deposit upon its escape. These are not to be overlooked and the colloid character of our problem should be recognized. The higher the pH of saliva (and this is affected by increasing the *rate* of flow—a neuro-glandular consequence of evaluation, semantic factors in the environment, such as various dogmas, taboos, etc.), the more deposits of tartar should be found upon the teeth if we have predictability. Predictability depends upon a map-territory relation of similar structure, from given assumptions we get certain consequences; if we get other consequences then we should investigate our assumptions. The lower the pH, the more likely that dental caries would appear.¹⁴ The validity of the above assumptions is still open to investigation.

Here, it is desired to point out a significant relation of dentistry to general semantics. Secretions do follow evaluation. Evaluation may be of an infantile character as based upon little investigation (signal-reactions), or it may be quite adult as based upon symbol-reactions, which are delayed reactions due to cortical differentiation, etc. As mentioned, the pituitary, parathyroids, parotids, gonads, etc., are seriously affected in their function by our evaluational reactions, and the *invariant* presence of some of these patterns in our nervous reactions may be something we have been overlooking in dental research.

The recent works of Doctors J. R. Blayney and S. F. Bradel, at the Zollar Dental Clinic, University of Chicago, present the significance of lactobacillus in the oral flora and its relation to disorganization of dental structure. The control of this organism

¹⁴ Lloyd E. Flagg and Louis G. Barrett, 'Electrical Conductivity of Oral Fluids,' *Proceedings of the Harriet Newell Lowell Society for Dental Research*, No. VI (Boston, Mass.: Harvard University School of Dental Medicine, 1920-21), p. 15.

and its relation to carbohydrates in the diet and possibly acidity (the pH data have yet to be collected scientifically), may be found in the work of Doctor Phillip Jay. Related to these, should be studied the findings of Drs. P. H. and L. J. Belding and of Doctor Joseph D. Berke, of New York,¹⁵ and his conclusions which include: mention of the similarity of the organic matrix of enamel and that of dentin as well as bone, the extensiveness of the organic matrix of enamel, the disposition of its histologic structure, and its ability to undergo change indicative of an active, although minute, interchange with the underlying dentin as a physiologic process.

Saliva being part of the culture media for the acidogenic organisms (mentioned as significant in dental decay), the carbohydrate factor so definitely related to these organisms may be eliminated by correction of the diet and improvement of the patient's general evaluational reactions. This improvement is necessary if our dietary advice is to be effective.¹⁶ Acidity or alkalinity may come within our control and this should affect the culture-media for organisms such as the lactobacillus and the streptococcus, for we are able with the aid of the methods of general semantics, through training in *proper evaluation*, to control the rate of flow and therefore the pH or acidity, and deal with parathyroid function affecting calcium metabolism, lime in the saliva, etc.

It becomes possible, therefore, to conclude (and this has been somewhat borne out clinically) that the direct chemical environment of the teeth, the bacterial factors and the function-structure—process going on (*structure* is a term for the macroscopic aspects of sub-microscopic *function*) can be advantageously influenced by the methods of general semantics as applied in using the structural differential,¹⁷ the extensional devices, neuro-semantic relaxation affecting blood-pressure,¹⁸ etc. Also these methods facilitate non-delusional evaluation by the profession of the many factors involved in the problems of dental caries, e.g. the methods co-ordinate 'diet', 'acid-base imbalance', organisms, endocrine function, etc., and take into account environmental changes as well as the organism-as-a-whole-in-an-environment as a *living process*.¹⁹

¹⁵ Cf. Notes 3 and 10 above for the results of the work of Doctors J. R. Blayney, S. F. Bradel, Phillip Jay, P. H. and L. J. Belding. See also Joseph D. Berke, 'New Findings in the Histology and Pathology of Human Enamel,' *Journal of the American Dental Association*, XXVII (August, 1940), 1229.

¹⁶ The writer has had the invariable experience of great difficulty in conveying these methods to others because of the tendency to attempt to understand something entirely new by translating it back into old terms and at once bursting into speech such as, 'Oh, you are just using psychology,' or psychiatry or whatever it seems nearest like to the listener or reader. Although much of these sciences, including mathematics, comes into use in general semantics, it is not 'the same as' any one of them.

¹⁷ A three-dimensional diagram, representing different orders of abstraction. It has been found extremely useful for training in consciousness of abstracting, non-identity, delay of

CARIES AND PSYCHIC TRAUMA

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(ABSTRACT)

Caries may be a result of *psychic trauma*; e.g. a suppressed desire, thwarted ambition, or any event resulting in an extended period of despondency. Psychic trauma incites sympathetic dominance of endocrine glands, which are controlled by mental stimuli through the vegetative nervous system, thus including suppressed function of the parathyroids and diminished secretion of blood calcium into the saliva. Deficiency of calcium in saliva shifts the pH (reaction) to the acid side of neutrality and increases caries susceptibility. A tranquil 'state of mind' contributes to a balance of the parts of the vegetative nervous system, resulting in balanced endocrine influences and freedom from, or arrest of, caries.

These conditions, which are essentially individualistic, indicate (a) why children in a group, in the same environment and having the same food, vary as to incidence and extent of caries; (b) why caries and calculus formation are not concomitant; (c) why mouths of some mothers during periods of gestation are caries susceptible, and of others are immune; (d) why civilized people are more susceptible to caries than the primitive; (e) why periods of immunity to caries follow periods of susceptibility, and vice versa; (f) why some clean mouths are susceptible, and some unclean mouths are immune, to caries; (g) and why the anterior lower teeth are less susceptible to caries. While the chemico-bacterial theory may seem to account for periods of susceptibility, it does not account for the periods of immunity that occur in some mouths.

References: E. F. Briggs, 'Our Emotions, Are They the Controlling Factor in Dental Caries?' *Oral Hygiene*, XXIV (1934), 1130; 'The Psychological Factor in Dental Caries,' *Oral Hygiene*, XXVI (1936), 340; *Nutrition and Dental Health* (August, 1936), 4, (April, 1938), 15; 'Emotions as the Controlling Factor in Dental Caries,' *Harvard Dental Record*, (October, 1938), 1.

GENERAL SEMANTICS APPLIED TO NUTRITION

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Nutrition is a process of vital importance for survival. It can be safely said to be the principal factor of immediate survival value for the individuals of the human species. If you doubt it, stop to consider the consequences of refraining from food for fifty consecutive days; at the end of this time, death usually intervenes. Apart from the fatal consequences of total abstinence from food, there are an indefinite number of degrees of insufficiency and inefficiency resulting from inadequate food intake, unbalanced food intake, inefficient digestion, absorption, and utilization of food, ranging from the deficient diets of well-to-do Americans down to the pronounced malnutrition and starvation among some Orientals and the war stricken peoples.

The phases of nutrition in relation to general semantics¹ which I wish to stress have to do with the commonplace diets of so-called 'intelligent' Americans—political, military and naval leaders, members of the learned professions, executives, artisans, etc.—persons such as you attending this Congress. Probably no single factor is of more immediate benefit for increasing human capacity for living than the simple process of transferring our nutritional evaluations from the macroscopic (object) to the sub-microscopic (process) level of abstraction.²

At the present time, we are confronted with a strange anomaly in the American scheme of living. While we have made gratifying progress in the control and elimination of infectious diseases, the incidence of degenerative diseases has increased greatly despite progress made in the so-called medical sciences. In addition to the clinical picture of degenerative diseases, we have a state of sub-clinical and pre-clinical conditions affecting the greater part of the population, but of which the medical profession seems only vaguely aware. The high proportion of rejections among draftees and statements from such bodies as the National Research Council to the effect that at least forty million inhabitants of the United States are existing on deficient diets are some of the first indications that our leaders are becoming aware of a condition known for a considerable time to a few isolated nutritionists, dentists, and physicians.³

¹ General semantics, the *modus operandi* of the non-aristotelian system as formulated by Alfred Korzybski and expounded in his seminar lectures. For explication of the leading terms and formulations of general semantics as used in this paper, see Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

² Consult *Science and Sanity*, *op. cit.*, Chs. xxiv, xxv, xxvi, xxvii, on abstracting, the structural differential and higher order abstractions.

³ See *Proceedings of the National Nutrition Conference*, May, 1941 (Washington: U.S. Superintendent of Documents); *Food and Life*, Yearbook of Agriculture, 1939 (Washington: U. S. Department of Agriculture, Superintendent of Documents); Weston A. Price, *Nutrition and Physical Degeneration* (New York: Paul B. Hoeber, Inc., 1939).

Deficient diets and inadequately utilized diets contribute in a large measure to this picture of prevalent degenerative diseases and sub-clinical and pre-clinical conditions. My contribution to the Congress will be to indicate how general semantics applied to nutrition helps to reveal the existence of these conditions and points the way to making at least a partial contribution towards correction of these conditions.

There seems to be a popular assumption, even among medical men, that the people of the United States have 'good' diets. Investigation of some of the factors involved reveals that American diets are 'good' by definition but grossly inadequate by extensional analysis. The words *good*, *refined*, *enriched*, applied to common foods such as pies, cake, sugar, bread, etc., imply superior nutritive 'properties' and when so evaluated at the macroscopic level they are generally accepted as adequate for nutritional purposes. For example, physicians when confronted with the requests of anxious patients for advice as to what to eat, frequently reply by saying: 'Use your own judgment. Eat a good diet.' They act as if the word *good* in front of the word *diet*—two noises or labels 'good' and 'diet' emitted pontifically from a blob of protoplasm labelled 'M.D.'—had the survival value of so many grams of protein, fat, carbohydrates; so many milligrams of calcium, phosphorus, iron, iodine, etc.; and so many units of vitamins A, B₁, C, B₂, D, nicotinic acid, etc.

In the field of nutrition there are many excellent illustrations of word-fact confusions resulting from false-to-fact *identification*; i.e. from acting as if all there is to 'food' were the labels and the macroscopic objects. Pies, cake, cookies, doughnuts, etc., 'are' 'good', 'delicious'; packaged 'cereals are 'refined'; breads are 'enriched', brimming over with pep and energy. As a result of the use of such potent but delusive adjectives, a preponderance of the total calories in a majority of the diets of American individuals are derived from such foods as bread, cereals, waffles, syrup, hotcakes, pie, cake, doughnuts, cookies, etc.; with the end result that the apparent energy needs are satisfied before the protein, mineral, or vitamin needs are met. Similarly, the noises or marks on paper, *reducing* and *diet*, when applied as labels to certain foods or combinations of foods are expected to have magical results in making pounds of fat disappear. When the facts are investigated it is often found that what is labelled 'fat' turns out to be not fat but predominantly water, and the reducing problem becomes—not a defatting process—but a dewatering process.* Results are achieved when we evaluate such 'overweight' individuals as 'water-logged' rather than 'fat' and proceed accordingly.

As stated above, pies, cakes, doughnuts, packaged cereals, bread, for instance, are called 'good' foods and evaluated accordingly as adequate for survival. This belief seems to be shared by some of the 'biggest names' in medicine. Witness the current program for the 'enrichment' of flour, cereals, etc., which is being advocated for compulsory adoption by the United States government at the request of the National Research Council and others. Here we have an example not only of the operation of the false-to-fact assumption of 'identity' but also an illustration of the artificial compartmentalizations (elementalism) so common in modern medical 'thinking'. Similarly, the oral cavity is evaluated as a separate and distinct 'entity'—apart from the gastro-

* See Williams Wolf, *Endocrinology in Modern Practice* (Philadelphia: W. B. Saunders Co., 1936).

intestinal system, or the blood system, or the endocrine system, etc. Bread, cereals, sugar, etc., are also evaluated as 'good' foods supplying 'energy' as an 'entity' which is implicitly assumed to be entirely unrelated to dental integrity, etc.

At the macroscopic level bread is generally evaluated as the 'staff of life', 'good', 'wholesome', 'brimming over with energy'. Functionally at the sub-microscopic (process) level in the human organism, one slice of the type of bread most favored by the majority of Americans furnishes the following amounts of nutrients to the diet.*

Protein	2.3 grams	Phosphorus	23 mgs.	Vitamin A	3 I.U.
Fat	.3 grams	Iron	.2 mgs.	Thiamin	9 mmgs.
Carbo.	13.3 grams	Iodine	.1 mmgs.	Riboflavin	..
Calories	65	Acid	1.8	Vitamin C	..
Calcium	7 mgs.	Base	...	Vitamin D	..
				Nicotinic Acid	.2 mgs.

Evaluation of other 'good' foods at this level are:

	1 slice apple pie	1 slice chocolate cake	1 doughnut	1 plain sugar cookie
gms. Protein	3.6	3.0	3.0	.7
gms. Fat	16.7	9.3	10.0	1.8
gms. Carbo.	57.2	24.0	24.5	7.0
Calories	394	192	200	47
mgs. Calcium	52	21	6	3
mgs. Phos.	40	48	30	7
mgs. Iron	.6	.4	.3	.1
mmgs. Iodine	.9	.4	.1	.04
Acid	...	1.8	3.3	.5
Base	.2	....	....	....
I.U. Vit. A	200	160	....	22
mmgs. Thiamin	33	6	9	3
mmgs. Riboflavin	43	35	28	....
mmgs. Ascor. Acid	10	....	....	....
I.U. Vit. D	....	....	....	....
mgs. Nic. Acid	....	.3	.5	....

These data may have significance to a nutritionist, but to a medical man, or a dentist their extensional value is not apparent until they are correlated with a number of other factors such as the nutritive requirements of a given individual performing certain work. For example, let us suppose that a man weighing 165 pounds has a daily need of the following amount of nutrients:⁵ Protein 150 grams, fat 78 grams, carbohydrates 325 grams, calories 2600, calcium 1000 milligrams, phosphorus 1500 milligrams, iron 15 milligrams, iodine 100 micrograms, vitamin A 5000 I.U., thiamin 2.5 mgs., ascorbic acid 75 mgs., riboflavin 2 milligrams, nicotinic acid 18 mgs., vitamin D 800 I.U. If bread is accepted at its face value as 'the staff of life' and if we assume the man uses bread as a source of only 25 percent of his energy, the same amount of bread that would supply 25 percent of the above-mentioned 2600 calories would only

* Since this was written, legislative action has been taken at the request of the committee on food and nutrition, National Research Council, to improve bread by an 'enrichment program' comprising the compulsory addition to white flour of thiamin, nicotinic acid and iron, together with the optional addition of riboflavin, and calcium.

⁵ See *Food and Life*, *op. cit.* and W. A. Price, *op. cit.*

supply 15 percent of the protein requirement (biologically inadequate protein, incidentally), only 7 percent of his calcium requirement, 15 percent of his phosphorus requirement, 14 percent of his iron requirement, 1 percent of his iodine requirement, less than one-half percent of his vitamin A requirement, less than 4 percent of his thiamin requirement, less than 5 percent of his riboflavin requirement, 2 percent of his nicotinic acid requirement, and none of his ascorbic acid and vitamin D requirements.

When this type of evaluation is applied, bread immediately loses its prestige as the 'staff of life'. For survival value it loses its prominence in the scale of food importance. Compare the values of a loaf of bread and a quart of milk in the scheme of contributing their quota to the survival of man. One loaf of white bread furnishes for ten cents the following amounts of nutrients:

Protein	36.8 grams	Phosphorus	368 mgs.	Vitamin A	48 I.U.
Fat	4.8 grams	Iron	3.4 mgs.	Thiamin	144 mmgs.
Carbo.	212.8 grams	Iodine	1.6 mmgs.	Riboflavin	...
Calories	1042	Acid	28.8	Vitamin C	...
Calcium	112.0 mgs.	Base	...	Vitamin D	...
				Nicotinic Acid	2.7 mgs.

One quart of milk for fifteen cents furnishes the following amounts of nutrients:

Protein	28.8 grams	Phosphorus	896 mgs.	Vitamin A	2590 I.U.
Fat	35.2 grams	Iron	2.0 mgs.	Thiamin	288 mmgs.
Carbo.	48.0 grams	Iodine	22.4 mmgs.	Riboflavin	1360 mmgs.
Calories	624	Acid	....	Vitamin C	224 mmgs.
Calcium	1120 mgs.	Base	17.6	Nicotinic Acid	4.4 mgs.
				Vitamin D	16 I.U.

Let me stress here a number of points of fundamental importance resulting from our present system of evaluation of foods at the verbal (definition) and macroscopic (object) levels.

A. Because of the implications of the adjectives 'good', 'enriched', 'wholesome', 'delicious', etc., we have given certain foods, such as bread, sugar, pies, cakes, cookies, a prominent place in our diets with the result that a preponderance of our total calorie requirements are derived from these foods, thereby usually causing extreme deficiencies in a number of vitally essential nutrients.

B. Because of the operation of our conditional reflexes, we have become conditioned to the continued use of such foods despite their physiological inadequacy. Food habits are built around them. Food manufacture, food distribution, food profits, etc., conspire to make it easy and attractive to procure them.

C. Because of space-time limitations, when such foods as bread, cereals, sugar, etc., form a preponderant part of a diet, other foods, which are more adequate (biologically more efficient), tend to be excluded. 'Two objects cannot occupy the same space at the same time.' For example, a breakfast of doughnuts and coffee automatically excludes a breakfast of, say, fruit, milk, and eggs. Tissues not only need certain amounts of nutrients, but they need these amounts within given periods of time. The full implications behind these space-time-food intake relationships are only appreciated when we recognize not only the positive functions of the essential

nutrients in the diet but also the consequences resulting from their absence. (Sub-microscopically considered, errors of omission become errors of commission.)

In addition to food intake, space-time relationships have an important bearing on other phases of nutrition. Take for example, the 'simple' factor of physical diagnosis labelled 'body weight'. A physician tells a patient, say a woman, to step on an apparatus called a 'scales'; reads a dial which registers 125 pounds; consults a table of heights, weights and ages, and pronounces her 'normal'; i.e. he says she is the correct weight for her height and age and thereby infers a 'normal' state of metabolism, in certain respects. He acts as if there were no space-time relationships whatever concerning the patient. Actually a more thorough investigation of the facts reveals that a great majority of patients (particularly women) who, by this weighing procedure are reported as of 'normal' weight or a few pounds underweight, are actually considerably overweight. Take the case of a particular patient, who according to the tables should weigh 125 pounds. She turns the scales at 124 pounds and her physician thereupon pronounces her of 'normal' weight. Investigation reveals that she is maintaining this weight on only 900 calories daily, but for maintenance of 'normal' body weight she would need a minimum of, say, 2000 calories daily. In other words, she is maintaining apparently 'normal' weight on only 45 percent of her calorie requirement. If her basal metabolic rate were 'normal', she should be emaciated on this intake of only 900 calories daily. Hence, she is grossly overweight. The surplus weight, incidentally, cannot be fat. It represents principally water retained in the tissues.

This type of evaluation by comparison gives the most revealing insight we have available into the state of the metabolism of an individual. Investigation of over three thousand cases has revealed that 51.6 percent of these individuals are either maintaining 'normal' weight or are plus or minus a few pounds of 'normal' weight on a calorie intake of less than 85 percent of 'normal' requirement. This gives some index of the incidence of varying degrees of low basal metabolic rates and also gives an insight into the incidence of the widespread sub-clinical states spoken of in the opening paragraphs.

Let us take another 'simple' factor of physical diagnosis labelled 'age'. Physicians usually act as if all there were to 'age' is the chronological lapse of time since birth. Roentgenographic analyses reveal that many patients, particularly adolescents, show a great disparity between biological age and chronological age. So-called intelligence tests show similar disparity between chronological age and 'mental' age. Thus we have—at least in Southern California—many adolescents chronologically aged fourteen to sixteen years who are, let us say, biologically aged ten years and 'mentally' aged eight or nine years. This is a factor of profound importance to orthodontists; yet it is usually ignored except by the few dentists and physicians trained in general semantics. This point also has profound significance for educators because children are usually classed in grades according to chronological age, regardless of other differentiating factors.

In Southern California we have a delusional state of affairs which I imagine would be difficult to equal elsewhere. We have a generation of 'big' children—'big' boys and girls of whom the parents are proud but for whom they should be greatly concerned. Investigation of other factors reveals that these 'big' children are, let us

say, chronologically aged sixteen, biologically aged twelve, and many of them mentally aged ten to twelve. Their 'bigness' is often not due to well-developed, robust physical fitness, but to deficiencies in certain physiological developments, such as maturation factors: in other words, they are immature children. Usually, they require orthodontic treatment. Many of them are asthmatics or have allergies, have low basals, have hypopituitarism, hypogonadism, etc. Similarly, we have many middle-aged individuals chronologically aged only 35, 40, or 45 years, but who are in such a state of physiological degeneration that they can be safely classified as biologically aged 60 to 75.

These references to 'age' and 'weight' factors are only a few examples of the false-to-fact elementalism and so identifications exhibited by physicians, dentists, etc., in dealing with their patients. These mis-evaluations can readily be traced if not to ignorance, at least to *acting as if* ignorant of the non-identity principle and the processes of abstracting on higher and higher levels; to ignoring the existence of the neural mechanisms involved in the abstraction and integration of the objects and happenings in the environment.

Proceeding beyond these 'simple' factors of physical diagnosis, let us investigate the current attitudes towards what goes on inside-the-skin and its relations with what is outside. According to current false-to-fact elementalism and therefore delusional orientations involving identification, we have a dental set-up, a medical set-up, etc. So-called diseases of the oral cavity are elementalistically identified with the higher order abstraction, 'dental' disease, as if unrelated to the state and functioning of the individual organism-as-a-whole-in-its-environment. Other so-called diseases of the blood system, of the gastro-intestinal system, etc., are identified with the abstraction, 'medical' diseases. (Please note the emphasis I use in referring to so-called diseases. The great majority of our so-called diseases are simply the names of symptoms and bear the same relation to the disease processes going on in individual organisms as words to facts, maps to territories, etc. Our ability to manufacture new 'diseases' is limited only by our ability to detect new symptoms and our ingenuity in manufacturing words with which to label them.)

According to these identifications—false-to-fact orientations, evaluations, etc.—'dental' diseases are set aside to be treated by dentists and are usually evaluated as distinct and separate from 'medical' diseases. So-called 'medical' diseases are not only set aside to be treated by medical men but diseases of the ear are treated by one kind of medical man; diseases of the throat by another kind of medical man; diseases of the gastro-intestinal tract by another kind of medical man; diseases of the urinary tract by another kind of medical man; diseases of the skin by another kind of medical man, and so on and on and on. Please do not misunderstand me. I am not decrying or belittling the need for specialized study, etc. I am merely pointing out some of the delusive aspects of the identifications and the false-to-fact elementalism current in the practice of medicine and dentistry.

The aristotelian-euclidean-newtonian assumptions on which medical and dental education is built are responsible for these artificial compartmentalizations whereby the oral cavity is evaluated as a separable and distinct entity apart from the gastro-

intestinal tract, the blood stream, the endocrine system, the psycho-logical states, etc., of the patient, causing dentists and physicians to act as if these structures and functions were separable, whereas actually, if we separate an oral cavity from a gastro-intestinal tract, we no longer have a patient—we have a corpse in the chair. According to the factual principles of non-identity and non-elementalism verified and supported by 1941 scientific data, the oral structures, gastro-intestinal tract, endocrine system, blood system, etc., are integral parts of the body-as-a-whole; of the body-mind-as-a-whole; of the body-mind-intellect-emotions-organism-geographical-sociological-economic-domestic-environment-in-space-time-as-a-whole; etc.

The implications of the new orientations are that events happening in one part of the body are reflected in conditions occurring elsewhere. Disturbances in other parts of the body are reflected in the condition of the mouth. Not only events happening outside the body, but events which happened in time already lapsed (e.g. as during the prenatal period, etc.) are frequently responsible for many developmental disturbances, for example, malplaced or malspaced teeth. The tissues not only of the oral cavity, but also of the gastro-intestinal system, the blood system, the endocrine system are built and derived from the same raw material, our daily food. The integrity and quality of these tissues are dependent on the presence in our food of certain nutrients and on the manner in which these nutrients are digested, assimilated, and utilized. Additional implications are that not only should the practice of medicine and dentistry be correlated through physicians and dentists working co-operatively but also that their findings should be correlated. This means that a working knowledge of nutrition among other sciences is essential to the practice of medicine and dentistry.

* * * * *

My purpose in the remainder of this paper will be to illustrate with a number of typical cases the value of *Diet Analysis* and other nutritional devices as extensional techniques in the evaluation of 'medical' and 'dental' problems. These cases are selected from over three thousand which represent a typical cross-section of 'intelligent' Americans: professional men and women, college students, school children, business executives, high army and navy officers, politicians, school teachers, university executives, etc. These case studies represent an attempt at the nutritional evaluation of 'medical' and 'dental' problems at sub-microscopic (process) levels. The information brought to light is most revealing in showing the basis for much of our degenerative, sub-clinical and pre-clinical conditions existing today and in showing some of the common background to our 'medical' and 'dental' problems. The great majority of these three thousand cases have been referred from nutritionally trained physicians and dentists with at least some background in the principles of general semantics.

CASE I

RAMPANT CARIES

Case I is labelled a 'dental' patient, a nineteen-year-old hotel maid, 14 pounds 'overweight'. The dental diagnosis is rampant caries. The usual procedure of the aris-totelian dentist would be to explore for cavities, ream out the decay, fill the holes,

and put the patient down for another appointment six to twelve months later, expecting to repeat the procedure. Not so with the non-aristotelian dentist who, trained in non-identity and so non-elementalism, no longer looks *only* in the mouth. His approach is to evaluate rampant caries as the end-product of a process of events happening in the physiological (bio-physico-chemical), psycho-logical, etc., environment of the patient. Having established the extent of the caries process, his first procedure is to collect pertinent data regarding the physical status of the patient. His next step is to make an exhaustive investigation of the food habits of the patient. In this procedure he obtains an accurate record of every item of food and drink consumed by the patient for a period of one week. His next step is to have a diet analysis made of this food and drink intake. In the process of diet analysis, the items of food and drink intake are evaluated in terms of the average amounts of protein, fat, carbohydrates, calories, minerals, and vitamins ingested daily and compared with the amounts estimated to be required by that particular patient. Table I illustrates the detailed diet analysis. This is what the evaluation of the patient's diet reveals at the level of nutritional function:

TABLE No. 1

Average Daily Intake			Estimated Requirement		Deficiencies
Protein	68	grams	130	grams	47% Deficient
Fat	79	grams	53	grams	43% Excessive
Carbohydrates	251	grams	250	grams	Optimum
Calories	1990		2000		1% Deficient
Calcium	950	mgs.	2000	mgs.	53% Deficient
Phosphorus	1170	mgs.	2500	mgs.	53% Deficient
Iron	8.9	mgs.	18	mgs.	50% Deficient
Iodine	43.2	mmgs.	100	mmgs.	57% Deficient
Acid	22.7				
Base 1 : 1 . 3	30.3		1 : 3		56% Deficient
Vitamin A	6050	I.U.	10000	I.U.	40% Deficient
Thiamin	570	mmgs.	1950	mmgs.	69% Deficient
Riboflavin	1610	mmgs.	2000	mmgs.	19% Deficient
Vitamin C	72	mmgs.	75	mmgs.	4% Deficient
Vitamin D	14	I.U.	800	I.U.	98% Deficient
Nicotinic Acid	12	mgs.	24	mgs.	50% Deficient

A study of the food items reveals the following pertinent facts: 820 calories daily or 33 percent of the average daily caloric intake (175 grams daily or 70 percent of the total carbohydrates) are derived from grains and refined sugar products; such as bread, cake, rice, sugar, syrup, candy bars, coca-colas, etc. On this information alone, the dentist is able to predict (within 85 percent of cases) the presence of rampant caries without even looking in the patient's mouth.⁶ A further study reveals that this patient is 14 pounds overweight on 1990 calories, whereas she should need at least 2200 calories in order to maintain weight and perform her work as a maid. In other

⁶ A. L. Jensen, 'Is an Optimal Diet or a Low Carbohydrate Intake Required to Arrest Dental Decay?'; a paper read before the Research Section, American Dental Association, 83rd Annual Meeting, Houston, Texas, October 29, 1941.

words, she is 14 pounds overweight on only 91 percent of her calorie requirement, which indicates at least a low basal metabolism, with possibly other endocrine conditions such as hypopituitarism, the investigation of which is warranted.

After further study of the diet analysis, the dentist is not at all surprised to find the patient somewhat anemic, constipated, bothered with irregular menstruation, somewhat irritable, complaining of being tired, etc. (Note the implications in psychological states and so personal relationships behind the foregoing.) Furthermore, the dentist is able to predict that if this patient follows the corrective dietary procedure outlined to her on Monday morning, she has 85 out of 100 chances of the caries process being arrested by 10 a.m. the following Thursday morning.⁷ Furthermore, he has tangible evidence that endocrine malfunction may be interfering with metabolism generally. Arising out of his investigation, the dentist has valuable information to pass on to a co-operative internist.

CASE II

RAMPANT CARIES

Case II is an excellent example of rampant caries in the presence of a tolerably adequate diet, indicating the need for further investigation into other factors such as, inefficiency of digestion, absorption, metabolism, or factors interfering with these processes, such as so-called 'emotional' factors, etc.

TABLE No. 2

<i>Average Daily Intake</i>			<i>Estimated Requirement</i>		<i>Deficiencies</i>
Protein	95	grams	115	grams	17% Deficient
Fat	89	grams	60	grams	48% Excessive
Carbohydrates	203	grams	250	grams	19% Deficient
Calories	2059		2000		2% Excessive
Calcium	1093	mgs.	1000	mgs.	Optimum
Phosphorus	1462	mgs.	1500	mgs.	2% Deficient
Iron	10.8	mgs.	18	mgs.	40% Deficient
Iodine	64.2	mmgs.	100	mmgs.	36% Deficient
Acid	28.0				
Base	43.6		1 : 3		50% Deficient
Vitamin A	6705	I.U.	10000	I.U.	33% Deficient
Thiamin	1018	mmgs.	1950	mmgs.	48% Deficient
Riboflavin	2023	mmgs.	2000	mmgs.	Optimum
Vitamin C	143	mmgs.	75	mmgs.	Optimum
Vitamin D	25	I.U.	800	I.U.	97% Deficient
Nicotinic Acid	19	mgs.	24	mgs.	21% Deficient

Only 310 calories daily or 15 percent of the total calories are derived from grains and sugars which is not sufficient to account for the presence of rampant caries. In this case the dentist must look not only beyond the mouth, but also beyond the diet into functional and environmental factors. At the time this case was under investigation, this particular dentist was not familiar with general semantic principles and failed to go further in these investigations.

⁷ *Ibid.*

CASE III

RAMPANT CARIES

Here (TABLE No. 3) is a diet analysis in which the physiological (bio-physico-chemical) background of the American youth of today is written in 'black and white'. The patient is a 13-year-old adolescent girl of good family, a few pounds overweight and therefore weight-conscious. The dental diagnosis is rampant caries. Here's the analytical summary:

TABLE No. 3

<i>Average Daily Intake</i>			<i>Estimated Requirement</i>		<i>Deficiencies</i>
Protein	31	grams	125	grams	75% Deficient
Fat	54	grams	56	grams	4% Deficient
Carbohydrates	164	grams	275	grams	40% Deficient
Calories	1270		2000		37% Deficient
Calcium	310	mgs.	2000	mgs.	88% Deficient
Phosphorus	570	mgs.	2500	mgs.	77% Deficient
Iron	6.4	mgs.	18	mgs.	64% Deficient
Iodine	17.8	mmgs.	100	mmgs.	82% Deficient
Acid	10.2				
Base 1 : 3 . 4	34.2		1 : 3		Optimum
Vitamin A	3650	I.U.	10000	I.U.	63% Deficient
Thiamin	440	mmgs.	1800	mmgs.	75% Deficient
Riboflavin	890	mmgs.	2000	mmgs.	55% Deficient
Vitamin C	64	mmgs.	75	mmgs.	15% Deficient
Vitamin D	9	I.U.	800	I.U.	98% Deficient
Nicotinic Acid	5	mgs.	24	mgs.	79% Deficient

Let us see what we can infer from this analysis:

A. The patient is 4 pounds overweight on only 1270 calories daily. A 13-year-old adolescent should need at least 2750 calories daily to maintain weight. In other words, she is slightly overweight (gravimetrically speaking) on only 47 percent of normal calorie requirement. Obviously, she is grossly overweight—physiologically speaking—and the surplus weight cannot be 'fat' so we infer it is due to water retained in the tissues. This is a case not only of low basal metabolism, but also of hypopituitarism.

B. 510 calories daily or 40 percent of the actual calorie intake (92 grams or 56 percent of the total carbohydrates) are derived from bread, cereals, sugar, cake, and candies. Without looking in her mouth, rampant caries is statistically predictable from this one factor alone.

C. It can be inferred that if she co-operates in the dietary correction outlined for her, there are 85 chances in 100 of a spectacular arrestment of the caries process, a more 'normal' state of metabolism, more energy, improvement in the blood picture, and in gastro-intestinal and endocrine functions.

CASE IV

MALNUTRITION, ANXIETY-TENSION, RAMPANT CARIES

Here (TABLE No. 4) is the diet analysis of a 21-year-old student 16 pounds underweight, diagnosed as a case of malnutrition, anxiety-tension state, with rampant caries.

TABLE No. 4

Average Daily Intake			Estimated Requirement		Deficiencies
Protein	143	grams	135	grams	5% Excessive
Fat	120	grams	117	grams	2% Excessive
Carbohydrates	266	grams	325	grams	18% Deficient
Calories	2730		2600		4% Excessive
Calcium	1170	mgs.	1000	mgs.	Optimum
Phosphorus	1820	mgs.	1500	mgs.	Optimum
Iron	16.8	mgs.	15	mgs.	Optimum
Iodine	69.4	mmgs.	100	mmgs.	31% Deficient
Acid	45.9				
Base	1 : 0.9	42.0	1 : 3		70% Deficient
Vitamin A	7550	I.U.	10000	I.U.	24% Deficient
Thiamin	1150	mmgs.	2550	mmgs.	55% Deficient
Riboflavin	3025	mmgs.	2000	mmgs.	Optimum
Vitamin C	128	mmgs.	75	mmgs.	Optimum
Vitamin D	29	I.U.	800	I.U.	96% Deficient
Nicotinic Acid	30	mgs.	24	mgs.	Optimum

According to the clinical findings, we have the physical evidence of malnutrition (16 pounds underweight), yet the intake of nutrients is excellent. The patient is 16 pounds underweight on 2730 calories; he should be of 'normal' weight on only 2600 calories. This indicates either a rate of metabolism higher than 'normal', a wasting disease, or inefficient utilization of nutrients. Correlate these facts with the anxiety-tension state and we have the picture of an individual with partially arrested gastrointestinal function, unable to utilize and absorb otherwise excellent nutrients. It is safe to predict that until psycho-therapeutic treatment has been effected, negligible improvement in the malnutrition can be expected. Of the total calories, 840, or 31 percent, are derived from bread, rolls, doughnuts, cake, cookies, candies, and soft drinks. On this one count alone the presence of rampant caries can be predicted, and it is safe to say that dietary correction alone will arrest the caries process.

CASE V

EXTREME EROSION

TABLE No. 5

Average Daily Intake			Estimated Requirement		Deficiencies
Protein	106	grams	125	grams	15% Deficient
Fat	109	grams	56	grams	98% Excessive
Carbohydrates	211	grams	250	grams	15% Deficient
Calories	2250		2000		12% Excessive
Calcium	500	mgs.	1000	mgs.	50% Deficient
Phosphorus	1360	mgs.	1500	mgs.	10% Deficient
Iron	12.8	mgs.	15	mgs.	15% Deficient
Iodine	51.8	mmgs.	100	mmgs.	48% Deficient
Acid	34.8				
Base	1 : 0.6	22.3	1 : 3		80% Deficient
Vitamin A	5610	I.U.	10000	I.U.	44% Deficient
Thiamin	730	mmgs.	2775	mmgs.	73% Deficient
Riboflavin	1300	mmgs.	2000	mmgs.	35% Deficient
Vitamin C	38	mmgs.	75	mmgs.	49% Deficient
Vitamin D	23	I.U.	800	I.U.	97% Deficient
Nicotinic Acid	25	mgs.	24	mgs.	Optimum

In table 5, we have the case of a 45-year-old business executive considerably overweight (30 pounds). The clinical picture is one of extensive caries, extensive erosion, low basal metabolism, tense, tired, worried, etc. He is 30 pounds overweight (watery, not fat) on only 87 percent of his normal calorie requirement, indicating a low basal metabolism. Yet, he has an intake of nutrients higher than the average and should not be tired, etc., if he utilized these nutrients efficiently. The diet alone is sufficient to account for the dental picture. Resorption of the alveolar process could also be expected.

CASE VI

GINGIVITIS

TABLE No. 6

<i>Average Daily Intake</i>		<i>Estimated Requirement</i>		<i>Deficiencies</i>
Protein	40 grams	115 grams		65% Deficient
Fat	57 grams	49 grams		16% Excessive
Carbohydrates	160 grams	225 grams		29% Deficient
Calories	1420	1800		21% Deficient
Calcium	290 mgs.	1000 mgs.		71% Deficient
Phosphorus	600 mgs.	1500 mgs.		60% Deficient
Iron	6.8 mgs.	18 mgs.		62% Deficient
Iodine	31.6 mmgs.	100 mmgs.		68% Deficient
Acid	18.0			
Base 1 : 1 . 2	22.6	1 : 3		60% Deficient
Vitamin A	3840 I.U.	10000 I.U.		62% Deficient
Thiamin	390 mmgs.	1950 mmgs.		80% Deficient
Riboflavin	590 mmgs.	2000 mmgs.		70% Deficient
Vitamin C	68 mmgs.	75 mmgs.		9% Deficient
Vitamin D	13 I.U.	800 I.U.		98% Deficient
Nicotinic Acid	8 mgs.	24 mgs.		67% Deficient

Table 6 shows the case of a 25-year-old beauty operator, slightly overweight (watery) on only 1420 calories daily (65 percent of normal calorie requirement) with extensive gingivitis, predictable from the diet analysis.

CASE VII

PARADENTOSIS

TABLE No. 7

<i>Average Daily Intake</i>		<i>Estimated Requirement</i>		<i>Deficiencies</i>
Protein	94 grams	115 grams		19% Deficient
Fat	76 grams	71 grams		7% Excessive
Carbohydrates	212 grams	275 grams		22% Deficient
Calories	1910	2200		13% Deficient
Calcium	690 mgs.	1000 mgs.		32% Deficient
Phosphorus	1350 mgs.	1500 mgs.		10% Deficient
Iron	13.6 mgs.	15 mgs.		9% Deficient
Iodine	56.8 mmgs.	100 mmgs.		43% Deficient
Acid	31.5			
Base 1 : 1 . 3	43.6	1 : 3		56% Deficient
Vitamin A	9080 I.U.	10000 I.U.		10% Deficient
Thiamin	775 mmgs.	2100 mmgs.		63% Deficient
Riboflavin	1900 mmgs.	2000 mmgs.		5% Deficient
Vitamin C	89 mmgs.	75 mmgs.		Optimum
Vitamin D	34 I.U.	800 I.U.		96% Deficient
Nicotinic Acid	25 mgs.	24 mgs.		Optimum

Table 7 shows the case of a bank executive considerably underweight (16 pounds) on practically his full calorie requirement and an otherwise excellent diet; yet with extensive resorption of alveolar process, indicating systemic factors, tensions, etc., resulting from occupational stresses and strains.

CASE VIII

PARADENTOSIS

TABLE No. 8

<i>Average Daily Intake</i>			<i>Estimated Requirement</i>		<i>Deficiencies</i>	
Protein	67	grams	105	grams	36%	Deficient
Fat	55	grams	42	grams	30%	Excessive
Carbohydrates	117	grams	200	grams	41%	Deficient
Calories	1280		1600		20%	Deficient
Calcium	320	mgs.	1000	mgs.	68%	Deficient
Phosphorus	930	mgs.	1500	mgs.	38%	Deficient
Iron	8.2	mgs.	15	mgs.	45%	Deficient
Iodine	19.0	mmgs.	100	mmgs.	81%	Deficient
Acid	26.4					
Base	10.9		1 : 3		90%	Deficient
Vitamin A	3095	I.U.	10000	I.U.	69%	Deficient
Thiamin	580	mmgs.	2025	mmgs.	71%	Deficient
Riboflavin	830	mmgs.	2000	mmgs.	58%	Deficient
Vitamin C	24	mmgs.	75	mmgs.	68%	Deficient
Vitamin D	28	I.U.	800	I.U.	96%	Deficient
Nicotinic Acid	14	mgs.	24	mgs.	41%	Deficient

Table 8 shows the case of a typical middle-aged, well-to-do wife, 6 pounds underweight on only 1280 calories daily (58 percent of normal requirement) with extensive parodontosis, a low basal metabolism, worried, irritable, poor appetite, no energy, etc.

CASE IX

OTOSCLEROSIS

TABLE No. 9

<i>Average Daily Intake</i>			<i>Estimated Requirement</i>		<i>Deficiencies</i>	
Protein	89	grams	115	grams	22%	Deficient
Fat	82	grams	71	grams	15%	Excessive
Carbohydrates	260	grams	275	grams	6%	Deficient
Calories	2100		2200		5%	Deficient
Calcium	920	mgs.	1000	mgs.	8%	Deficient
Phosphorus	1500	mgs.	1500	mgs.		Optimum
Iron	12.3	mgs.	15	mgs.	18%	Deficient
Iodine	59.2	mmgs.	100	mmgs.	41%	Deficient
Acid	31.2					
Base	48.8		1 : 3		50%	Deficient
Vitamin A	12390	I.U.	10000	I.U.		Optimum
Thiamin	1160	mmgs.	2175	mmgs.	47%	Deficient
Riboflavin	2060	mmgs.	2000	mmgs.		Optimum
Vitamin C	34	mmgs.	75	mmgs.	55%	Deficient
Vitamin D	60	I.U.	800	I.U.	93%	Deficient
Nicotinic Acid	16	mgs.	24	mgs.	33%	Deficient

Table 9 happens to show a typical case of otosclerosis (progressive deafness). It is included to point out the similarity of dietary pattern to the diets in cases of alveolar resorption.

CASE X

PREGNANCY

Case X deserves detailed comment because it epitomizes the value of general semantics applied to nutrition. The label is 'pregnancy'. Table 10 gives the detailed diet analysis of this prospective mother aged 28, college trained, a professional woman, in the fourth month of pregnancy.

TABLE No. 10

<i>Average Daily Intake</i>			<i>Estimated Requirement</i>		<i>Deficiencies</i>	
Protein	50	grams	115	grams	56%	Deficient
Fat	46	grams	60	grams	24%	Deficient
Carbohydrates	175	grams	250	grams	30%	Deficient
Calories	1320		2000		34%	Deficient
Calcium	430	mgs.	2000	mgs.	79%	Deficient
Phosphorus	680	mgs.	2500	mgs.	73%	Deficient
Iron	7.2	mgs.	18	mgs.	61%	Deficient
Iodine	22.8	mmgs.	100	mmgs.	77%	Deficient
Acid	21.8					
Base 1 : 0.9	19.4		1 : 3		70%	Deficient
Vitamin A	4090	I.U.	10000	I.U.	59%	Deficient
Thiamin	500	mmgs.	1875	mmgs.	73%	Deficient
Riboflavin	1280	mmgs.	3000	mmgs.	57%	Deficient
Vitamin C	68	mmgs.	150	mmgs.	74%	Deficient
Vitamin D	17	I.U.	800	I.U.	98%	Deficient
Nicotinic Acid	14	mgs.	24	mgs.	41%	Deficient

Here we have an intelligent college trained woman, educated-by-definition, expecting to manufacture a baby on an intake of less than one-half the raw material needed for anything like adequate pregnancy. Consider the potential integrity of the tissues of this new human being in later life. How can there be adequate brain tissue, muscle tissue, bone tissue, thyroid tissue, adrenal tissue, pituitary tissue, gonadal tissue, blood tissue, gastro-intestinal tissue, etc., if less than 50 percent of the raw material is available? We would not expect to have an adequate automobile with one-third of the steel, one-half of the aluminum, and one percent of the ignition system. Why should we expect this potential mother to produce an adequate human being from 44 percent of the protein, 21 percent of the calcium, 27 percent of the phosphorus, 39 percent of the iron, 23 percent of the iodine, 27 percent of the thiamin, and one percent of the vitamin D, etc., requirements?

I have included a majority of 'dental' cases for a number of reasons. The oral cavity is becoming recognized as a readily observable index of events happening elsewhere in the organism-as-a-whole, and we, nutritionists, have more knowledge of 'dental' cases than of 'medical' cases because the 'dental' profession is found to be more co-operative and progressive. As I stressed above, an individual who is a 'dental' patient on Monday is probably somebody's 'medical' patient on Tuesday—who knows—perhaps he or she is a 'psychiatrist's' patient on Wednesday, is being sued for divorce on Thursday, or having a baby on Friday.

These cases, I believe, illustrate aptly the application of the principles of general semantics to nutrition. Acting on the false-to-fact principle of identity, we have been relying on the macroscopic objects labelled 'food' for our survival. Unfortunately

for our physiological (bio-physico-chemical) integrity, it so happens that many of the foods which our American civilization has labelled 'good', 'wholesome', 'delicious' have the least adequate survival value. What irony! While we were making such technological progress in other directions, we have retrograded—unknowingly and unthinkingly—in our psycho-somatic progress.

Fortunately for our future survival, the ways and means of retracing our steps and correcting our mistakes have been made available, thanks to the principles, methodology, and techniques of general semantics.

The factual principle of non-identity and the process of abstracting in the natural order applied to our dietary and nutritional problems enable us to evaluate our foods by analysis and function rather than by verbal definition. False-to-fact identifications and so elementalism are shown to be the basis for much of the delusional approach in our present attempts at the solution of our physiological (bio-physico-chemical, etc.) problems. So long as we persist in the current aristotelian methods, we can never hope to achieve the state of psycho-somatic integrity which we suspect is attainable.

We are now beginning to get a faint insight into an effective method of approach toward achieving that state of psycho-somatic perfection of which at least one of the characteristics would be freedom from disease. 'Endowments', 'foundations', 'social welfare', immunization are of no avail for real accomplishment unless and until the principles of general semantics are welded to the other sciences. When that state shall have been achieved, we may discard our labels of 'dentist', 'physician', 'psychiatrist', 'nutritionist', etc., and be content to be co-operating scientists in the Science of Man.

GENERAL SEMANTICS AND THE RORSCHACH TEST

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In the last decade the projection test as typified in the Rorschach inkblot method has come in for much publicity and criticism. Some hail it as a short cut to diagnosis, others treat it as a kind of 'black magic'. Taking our perspective from general semantics we choose to treat these tests as recording types of reaction that can be correlated to the abstracting function of the nervous system.

Although Hermann Rorschach, Swiss psychiatrist-psychoanalyst, was not the first to use the inkblot method in testing human reactions, he was perhaps the first to realize that different organisms react in specific ways to inkblot stimuli, and in such a manner that their unique reactions can be tabulated and used to study human personality structure. Since the Rorschach test is so well known, we shall only mention that a subject is presented with a series of cards, ten in all, on which are reproduced inkblots variously colored and shaded; and that this is done with little more directions for handling the cards than saying, 'People see different things; we wish to know what you see'. This is after the method of Rorschach, as refined and described by Klopfer, Beck, Hertz, et al.*

Rorschach had a thorough clinical knowledge of his hundreds of subjects, and formulated his generalizations, inferences, etc., from a purely empirical point of view. Twenty years have passed since he presented his *Psychodiagnostik*.³¹ Since his untimely death, co-workers and disciples have enlarged and refined his methodology. At present the test has become a valuable psychiatric adjunct and a useful procedure in many lines of personality study, as described by Kelley of the Psychiatric Institute, New York.³² The test has its limitations, and is of greatest value where it can be verified clinically, or treated semantically as a map-territory relationship, so that the testers do not become involved in dogma and speculation.

The Rorschach test is similar to other projective techniques in that it investigates the reactions (in this instance the abstract-projection) to an unstructured or loosely structured situation (the inkblots). The advantage over some of the other projective techniques, e.g. the Thematic Apperception Test, the Hanfmann-Kasanin Concept-Formation Test, Play Techniques, etc., are (1) the widespread literature and (2) the relative ease in scoring and quantitative study.³⁰

The Rorschach test is perhaps best compared to an emergency situation where we find a human organism reacting in a way most typical of its complex organization. As in any reaction to the environment, the organism does not react to all stimuli. The freedom with which the organism reacts to the inkblot stimuli assures great spontaneity of expression, and in such a way that the inkblot interpretations (abstractions) can be regarded as an organism-as-a-whole reaction. Also there is the advantage that the subject has no fear of a conflict with 'reality' in making his responses. That the inkblot method reaches the deeper layers of the personality structure has been demonstrated

* See numbers 20, 1, and 10 in the References listed at the end of this paper. For all further references see corresponding numbers in this list.

by various methods. In recent experiments with electric convulsive therapy cases, where only amnesia resulted without shifts in the clinical pattern, the Rorschach reaction remained relatively unchanged even though the patient did not remember that he had taken the test previously.³⁶ Other Rorschach workers have demonstrated the constancy of the test as a personality reflector.^{32, 28, 30}

The Rorschach inkblot test is more method than theory. Rorschach himself regretted the lack of theoretical material. In a search for underlying structure, Piotrowski recently pointed out a useful analogy when he stated that, 'In Geometric projection the totality of relations within the body must be comparable to the totality of relations within the projections of the body. Similarly it is only the whole personality as projected in the inkblot interpretations which is comparable with the whole living personality.'²⁷ In general semantics terminology we would say that there is a similarity in structure of the abstract-projection with the functioning personality.

The physiology of projection entails a study of the physiology of perception, eidetic imagery, etc.; the synthesis of neuro-evaluational mechanisms, etc., which can be clarified by reference to such texts on medical psychology as Kretschmer or Woodworth's *Psychology*.^{28, 35} Briefly, projection is effected by the process of reversing the physiology of conduction of sensory impulses from the outside to the central nervous system. Thus while 'sensations' produce our notions, beliefs, etc., so can our notions produce 'sensations', etc.

Naturally we all use the projective mechanism automatically for our survival. In an injury to any part of the body we project the 'pain' to the parts where the structural lesion occurs. Failure to so react might result in bodily harm, or in an 'idealistic philosophy' of denial of pain, etc. Then again, one may consider projection, as Karen Horney puts it, 'simply belief that others feel as he does and nothing more'.³¹ Projection may be described as a 'device' that serves to stabilize the personality. It only becomes of psychiatric importance when we deal with personalities that are disordered: those with arrested personality developments, those with unresolved conflicts, those with an over-dependence on words for their orientations, etc. This use of the term *projection* follows the general formulations of Alfred Korzybski.²² As he has demonstrated, by this mechanism one projects onto the 'senses', mostly unconsciously, memory traces or doctrinal impulses, etc. ('from the cradle up!'), which may become hallucinations, delusions, illusions, etc., depending upon the intensity of inner needs and environmental stresses. In some such manner does one project onto the inkblots abstractions produced by and unique for his own nervous system. In such a manner the subject unwittingly reveals his reactions, evaluating mechanisms, etc., and his personality structure.

Disturbances in evaluation can be measured by investigating the projective mechanism as revealed by reactions to the Rorschach test. We find that each human organism automatically projects his own evaluations, or mis-evaluations, onto the inkblots. It has long been observed that the linguistic structure of a patient's utterances, of the symbolism used, is an invaluable diagnostic aid in psychiatric procedure. In like manner, the study of the structure of the utterances made in response to the inkblots has become an aid to diagnosis, to understanding of personality structure, etc.

II

A recent observer has classified semantogenic disturbances into two groups (though they are, of course, interconnected): 1) disturbances in the production of forms of representation, and 2) disordering of neuro-psyche evaluating mechanisms.⁴ The disturbances of production include so-called feeble-mindedness, defects in brain structure, etc., evidence of a limited capacity to symbolize reactions. Rorschach literature abounds with such examples as Beck's work with feeble-minded groups,² Piotrowski's formulation of 'organic' signs for disturbances in the central nervous system²⁹ and others.

The second, or disorders of interpretation, will receive our attention here. They in turn may be subdivided into private evaluations, those pertaining to one's self; and public evaluations, those pertaining to communication with others. Further differentiations may show focal, i.e. limited mis-evaluations of some symbols; or diffuse, i.e. unlimited mis-evaluations. There is a natural overlapping, as one may have disturbances in both, more of one, less of the other, etc.

In studying the structure of the reactions to the inkblots we are greatly aided by a review of the abstractions made by human beings, from the two-year-old level, on up through the maturity of the organism. Klopfer has found that Rorschach records of preschool subjects show change in a specific manner at each level, corresponding to the advancing levels of neuro-psyche investigation. Obviously difficulties of administration are present with young children because of lack of attention, etc., but some generalizations may be made from the observed data. The young organism reveals an extravertive type of reaction, typical of the investigatory trend of the child. The child in his repetitions, etc., has not reached adult levels of integration. The 'normal' reaction shows little differentiation between what belongs to the outside world and what is part of the evaluating organism.¹⁷ So at the two-year-old level, identification is the normal phenomenon; in what we may label lower order abstractions, only similarities are being discovered, and these are identified with previous sensory impressions.

Going up the chronological scale we find increasing differentiation, more ability to separate the 'real' from the 'unreal' in the responses to the inkblot stimuli. As the organism-environmental interrelationships progress we see withdrawal and integration, a swing inward which goes on up to adolescence. We may treat this as a period where the organism is integrating the experience from its earlier contacts with the environment: a cyclic affair throughout. Then passing through adolescence we again see a swing outward, new investigation culminating in a higher order integration around the age of thirty. Note the order: experiencing first, evaluation later. It may be pointed out here that the organism-environmental interrelationship as demonstrated by this swing from extraversion to introversion and synthesis follows Korzybski's hypothesis of the circularity of human knowledge.²²

In the study of these immature abstractions we are able to determine what is so-called normal in the adult evaluational mechanism, just as in psychiatric procedure we must know what constitutes pathological evaluation before we can set up standards for the normal. As Klopfer has stated,

Some of the reaction patterns found in adult pathological cases only are produced by young children normally, and to such an extent that we gain a new insight into the dynamics which produce such patterns. Even reactions like contamination,

considered pathognomonic for schizophrenia, seem to belong to the normal repertoire of gifted preschool children.¹⁷

Hence the suggestion that with a comparison of abstractions made at different levels of development of the nervous system, we have a unique method with which to study the phenomena of regression, arrested development, problems of identification, confusion in orders of abstraction, etc. In brief, disorders in the neuro-psycho-logical mechanisms of evaluation.

It was on the basis of thorough clinical knowledge of his subjects that Rorschach made his generalizations. A clinically described patient gave reactions to the inkblots which were tabulated. When later a similar reaction was found, Rorschach inferred by induction that a clinical picture similar to that one previously described would be present. In like manner we maintain that certain reaction-types in adults showing confusion in orders of abstraction, etc., may be compared to the lower order abstractions, revealed in the patterns of less mature individuals. In such a manner we find that 'mental' illness (infantilism included) appears to be a semantically arrested development or a regression to lower levels of identifications, etc., similar to those of the primitive or the infant. So we find that behavior can be correlated with different levels of regression or mis-evaluation, and from this relationship we can make a clinical diagnosis of 'neurosis', 'psychosis', etc., according to degree and intensity.

Naturally the adult organism does not react exactly as the infant does, still we can see striking similarity in the structure of the reactions of children and maladjusted 'adults'. The picture is obviously complicated with certain substitute phenomena seen in more mature individuals, but even this fails to cover up the basic similarity of reactions as revealed by the Rorschach inkblot responses.

III

Scoring and interpretation of reaction patterns involves training and experience in the Rorschach method, and detailed analysis of various inkblot records would go beyond the scope of this paper. Here we intend only to present a few of the scoring 'categories' and compare their changes with the changes in the nervous system. It must be emphasized that the Rorschach evaluation depends on the reaction-as-a-whole, so that interpretation of a 'part' is necessarily false-to-fact. But to understand the whole we must break it down into separate parts, in order to study the structure. The technique is complicated, yet the interrelationship is simple. The test is often compared to a jigsaw puzzle where each part must be placed in its proper relationship in order to see the whole picture. Our present detailed analysis is a high order abstraction of the map-as-a-whole.

We shall deal with only three major sets of scoring symbols, (1) movement, (2) form, and (3) color reactions. Movement will be subdivided into human-movement, designated M; into animal-movement, designated FM; and into inanimate-movement, designated 'm'. The responses in which form or outline is the chief determinate are classified as good-form or poor-form as the case may be. The color responses are divided into form-color where both form and color are combined into the abstract-projection, designated FC; color-form where color is primary, form merely secondary, designated CF; and where pure color responses are given regardless of form, designated C.

It must be remembered that these symbols are high order abstractions, used as 'memory aids' (after Piotrowski). Following Korzybski's map-territory analogy, they constitute static symbols of the abstractions made by the subject in his dynamic reaction to the inkblot stimuli. Our inferences are necessarily far removed from the total dynamic reactions. Now to go back to the earlier classification of disorders of interpretation, we will relate the human-movement (M), animal-movement (FM), and inanimate-movement (m) responses as representative of one's own experience and relate the color responses to that of communication from others. It must be re-emphasized that these overlap, that isolation in such a manner is made simply to understand the analogy. So, too, we may treat mis-evaluations as focal, i.e. limited to a narrow range of symbols or they may be diffuse or apparently unlimited after the manner described by Douglas G. Campbell.⁴

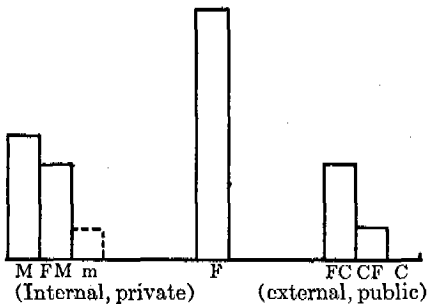


FIGURE 1.—'NORMAL'

In the 'normal' reaction, the human-movement (M) responses equal or exceed the animal-movement (FM) responses; the form-color (FC) responses exceed the color-form (CF) responses in a 3:1 ratio.

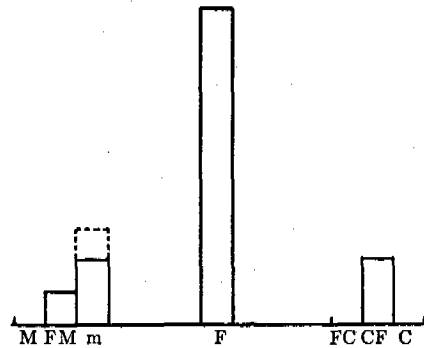


FIGURE 2.

Where there is infantile constriction, the animal-movement (FM) responses exceed the human-movement (M) responses; the color-form (CF) responses exceed the form-color (FC) responses.

Empirically and clinically we have studied these movement, form, and color responses in terms of personality reaction, behavior, and so the evaluational standards of different individuals. In general, we discovered that subjects abstracting human-movement (M) among their responses show more of that inner control and stability found in more mature personalities. We might compare this type of reaction with higher order abstractions. The animal-movement (FM) responses have been found in most instances to indicate the less differentiated, primitive activity of the individual. Consequently we classify them as abstractions of lower order in comparison with the higher order human-movement abstractions. The inanimate-movement (m) usually indicates that a tendency toward the more mature M has been repressed, signifying tensions, etc., in the personality structure.

The percentage of responses where form is the chief determinant, as well as the accuracy of these abstractions, appears related to a conscious, 'logical' control of the individuals, the need or use of such 'logic' varying in each clinical syndrome. The color responses have been related to affective aspects of relationship of the individual

to the environment, etc. Form-color (FC) responses have been found to correspond to a capacity for affective 'rapport', effectual contact with the environment, etc. Where color is primary and form secondary (CF), we have found affective instability as in over-sensitive, suggestible individuals—an 'egocentric' affectivity. Then with the pure color reactions (C), we found impulsivity, lack of use of the delaying mechanism in environmental contacts, etc.

When we investigate the patterns of young children we find no human-movement responses, and that animal-movement is abstracted first. The form perception tends to be crude, and the color responses a less differentiated pure C type. Our movement-to-color relationship (M:C), or inward to outward responsiveness, reveals an emphasis on the color side, the primary tendency for environmental contact and investigation. As the nervous system develops (chronologically ages), the abstractions become more differentiated. Human-movement responses do not appear until around the age of eight, except among 'superior' children. The animal-movement responses predominate over the human-movement responses, up to adolescence. Considering it as the more primitive type of reaction, we conclude that the more automatic type of behavior predominates in the inner life of immature individuals.

The form accuracy changes in like manner. From a statistical study, superior-form responses change from seventy percent at the two to three-year level, to ninety-four percent at the six to seven-year level.¹⁷ So we see a developing conscious control, or structuralization as the organism-environmental interrelationship progresses.

As with the others, the color reactions shift from the undifferentiated color response, pure C, to the more differentiated CF or FC. The change is gradual from the outward type of reactions at immature levels, to the more inward type at adolescence.

So at different chronological levels we get distinct types of reactions, abstractions, evaluations, that correspond to developmental levels of the nervous system. Now when we study the Rorschach records of subjects who are chronologically 'adults' we frequently find ratios similar in structure to the Rorschach patterns of children. For example (FIGURE 2), in subjects with a clinical diagnosis of 'infantilism' we find the M:FM ratio similar to that of children, the FM far greater than the M. This reaction pattern revealing the infantile, more primitive, automatic types of response consequent upon lower order abstractions may be assumed to indicate a lack of the integration necessary for adult adaptation.

In a direct comparison of the records of adults and children we must take into consideration the experiences of the former, where we find different types of 'defenses' and of compensations for adequate adjustment. These can be seen in the total record as rationalization, verbalism, withdrawal, a preoccupation with tiny details, etc., which are analogous to clinically observed behavior patterns. Despite these substitute phenomena, the underlying mechanisms of evaluating, i.e. types of abstracting, will be clear. In severe regression we get the curious reactions of the use of adult imagery at the regressed level, seen as 'flight of ideas', dissociation, etc.; the bizarre treatment of the inkblots is obvious.

When we look upon these movement and color reactions as predominantly internal and external communication-reactions we can by investigation of their number and quality determine if the individual is reacting adequately to the environment, or

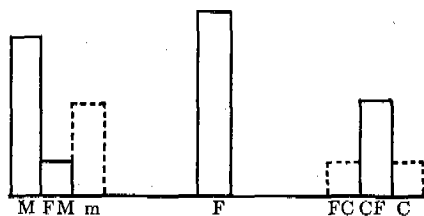


FIGURE 3.

Case where movement responses (M) are found to be fantastic; the color responses of the 'egocentric' type, undelayed reactions.

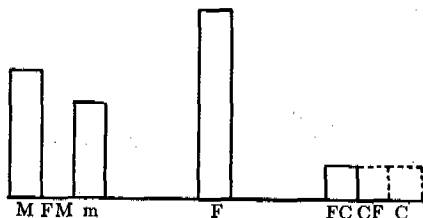


FIGURE 4.

Case with probable repression; adequate human-movement (M), suppressed animal-movement (FM) creating tension evident in 'm'.

is more or less lost in his own fantasy life, etc. For example, we may find a Rorschach record with many human-movement responses (FIGURE 3), suggesting that private, inner symbolism is no problem; yet at the same time the color reactions may be on the level of the pre-adolescent, the impulsive, 'egocentric' type of response. An investigation into the quality of the movement responses may find them to be 'unreal', more fantasy than 'reality', or the abstraction of human-movement for the most part from unusual places in the blots. Then we can look into the subject's environmental evaluations, discover the possible mis-evaluations, fixed reaction patterns, etc., that signify maladjustment. Another record (FIGURE 4) may contain human-movement, no animal-movement, but more inanimate-movement responses, suggesting a repressing mechanism at work, implying a lack of integration as an adult. This may be labelled a chronic 'inhibiting' process, with the compensation appearing at some other part of the Rorschach pattern. Still another record (FIGURE 5) may show no human-movement, no color responses, the 'psychic energy' (Rorschach's terminology, *Erlebnistyp*) being used in a narrowing, constricting mechanism appearing in the record as an over-use of form-determined responses, found among the over-verbal, the rationalizers, and others. Finally a record may show disturbances in all three areas, movement, form, and color (FIGURE 6). These we label as diffuse rather than focal mis-evaluations. Once more, we wish to emphasize that it is nec-

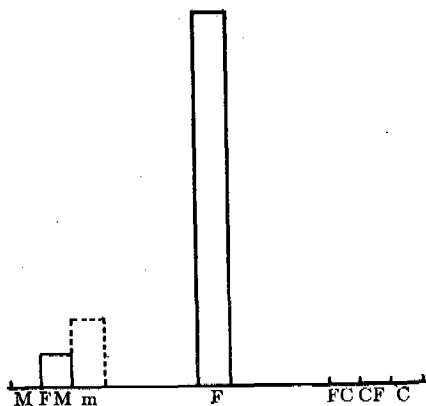


FIGURE 5.

A more constricted case, the 'energy' used in 'conscious control' (F' column); failing to integrate external stimuli.

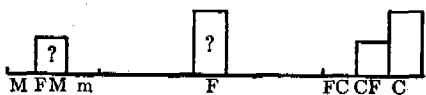


FIGURE 6.

An example of diffuse mis-evaluation; major deviation from the 'normal' in movement (F, FM, m), color (FC, CF, C), and form (F) responses.

more, we wish to emphasize that it is nec-

essary to study the reaction as-a-whole; that this arbitrary separation into private, public, etc., mis-evaluations is structurally inaccurate, yet necessary to understand the types of abstracting, etc.

A further use of the Rorschach method can be made by analysis of the structure of the verbal responses which the subject gives. Such statements as, 'It is either . . . or . . . and that is all,' exemplify antithetical evaluation typical of the ambivalent, some manic-depressives, the 'burnt child' and others. This we have labelled the more primitive, two-valued orientation.

Clinical descriptions of 'neuroses' include such expressions as (1) 'lack of inner stability', (2) 'an infantile adaptation', (3) 'inability to adjust to the environment', (4) 'excessive anxiety-tension', (5) 'stereotypy and restriction of spontaneity with an attempt to substitute conscious control for genuine adjustment.'²⁴ From an extensional point of view we can look upon such expressions as representations of the degree of mis-evaluation present, since we evaluate neurotics, psychotics, etc., as examples of disordering of the abstracting processes, i.e. as varieties of neuro-semantic disturbances.

The reaction pattern then, containing no human-movement responses, poor-form, and violent color responses may be considered normal for the small child, but as pathological semantic reactions for the adult, and can be looked upon as evidence of regression, etc., as suggested by Korzybski. As could be predicted, these subjects with serious disorders of evaluation treat the inkblots as 'reality', failing, as do young children, to differentiate symbols from objects. Confirmation of this observation comes from Klopfer's examples which show that certain responses normal for small children are pathognomonic of schizophrenia in adults.¹⁷

IV

In conclusion: This paper does not aim to change the present interpretations placed on the Rorschach inkblot reactions. Following the orientation of general semantics, however, it suggests that we evaluate the inkblot responses as types of reaction, i.e. neuro-semantic reactions. Treating these abstract-projections as maps we have a useful method for comprehending the map-making of an individual, can measure the structural adequacy of his 'maps', i.e. his private, public, etc., evaluations, his orientations to life. Furthermore these unique types of reaction, these maps, form an orderly series which may be correlated with the corresponding levels of development of the human nervous system. Finally, it is suggested that certain changes could be made in the Rorschach terminology itself to bring it more in line with the formulations of general semantics. This in turn would make the Rorschach inkblot test a more effective tool in testing the abstracting function of the nervous system.

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PART II

Mental Hygiene Aspects of Individual and Public
Psycho-Logical Adjustments

Section A

THE DILEMMA OF MENTAL HYGIENE

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In the entourage of any great contributor to our knowledge one will find two trends or more accurately types of persons of more or less opposing orientations. There are those who catch his words, play with them as they have always played with words, apart from the non-verbal facts for which they supposedly stand. They repeat these words with the apparent joy of being at one with their author. 'I say his words, I therefore have his thoughts, I therefore am equivalent to him.' The word becomes the fact. One finds sooner or later that the outcomes of these pupils' efforts are the opposite in extensional value of that of the master, for one becomes such a master because he has made words his servants and has centered his attention on the facts for which words stand.

The other type of person follows not necessarily the master's words but rather the master's ways of handling facts. Such a person extends and improves on the original contribution. The two types of followers can be easily distinguished by a study of their writings. The latter retains certain tool words because they stand for something that has no other formulation. Otherwise his diction and style are his own. The former can not make this distinction. He either copies the wrong words or supplants his own style unnecessarily with that of his master.

Mental hygiene and education have had a succession of great leaders and too often have lacked great followers. What is mental hygiene anyway? Let us see.

What is mental hygiene? Far too often it is a mere coupling of words used to buttress some statement about human living—'Mental hygiene teacher', 'Mental hygiene says', 'Mental hygiene aims', are typical expressions of this use. Actually mental hygiene says, teaches and aims at nothing, it is merely a label for a set of observations, facts and theories that have some bearing on human survival, productivity and satisfaction.

The term *mental hygiene* has been so loosely used that at times it seems to have quite opposite bearings upon the living of people. This problem has come about in large part either from the fact that principles and statements so labelled have not been tested against the living of people or from the tendency to equate all people. Mental hygiene has usually been given a scope that includes a concern for adequate care of the chronically psychotic for whom there is no promising specific treatment. This is simply because those who are concerned with the safeguarding of mental health very properly have applied their efforts also to the protection of the 'mentally' ill. There is good reason why the same persons should be interested in both the protection and treatment of the 'mentally' ill and the preservation and enhancement of mental health, but this coincidence of interest should not be permitted to obscure the 'meaning' and scope of mental hygiene.

Confusion has also arisen from failure to recognize the fact that mental health is imperfectly subject to set rules but is influenced by the peculiarities of development and experience of the individual. In other words, there has been a failure to distinguish between $Smith_1$, $Smith_2$, etc. Again, confusion has been increased by the failure to define the setting within which a principle will work. As a result, principles that are effective under some conditions have been applied to disadvantage under other conditions. For example, there has been special preoccupation with freedom of expression as a way to the achievement of mental health, without sufficient interest in defining the conditions under which this expression is 'wholesome'.

These confusions have been facilitated by a habit of dealing with the contrast of the 'physical' and 'mental' as if it represented a contrast between different levels of abstraction. It may be in order, therefore, to deal first with that contrast.

Let us first center attention on $Smith_1$. What assumption can we make as to his aims in life? In general, $Smith_1$ wants to be sure of living, he wants or needs to be productive and he wants to enjoy himself. If these are the things he wants, then the various aspects of his living must be related to these goals if they are to have value for him. In order to attain these goals, he tries to assure himself of health, i.e. functioning sufficiently to assure them.

Now let us assume that $Smith_1$ begins to feel inexplicably listless. He goes to his doctor who examines both his physical and mental condition. Let us see what the difference is between these two processes and understand the essentials of the contrast between 'mental' and 'physical'. Let us say that the doctor starts with $Smith_1$'s heart. He studies its rhythm, its blood pressure, the noises it makes and from this decides whether its effort is competent, labored or insufficient. He may conclude that $Smith_1$'s heart has not the capacity to carry its load. He studies not only the behavior of the heart but that of its neighboring organs. He may find the kidneys are passing albumen, that the liver has swelled to unusual size and that the lungs make a bubbling sound, all indicating that circulation has been poor. He may even find that while the heart pumps fairly well, it is injuring the rest of the body by distributing bacteria throughout the course of the blood stream. It has become a menace in the community of organs. But all in all, the attention of the doctor has been centered upon the behavior of the heart rather than upon its substance although he is interested also in its size.

Then the doctor goes on with his 'mental' examination of $Smith_1$. He can study the material side of the body-as-a-whole a little easier, because in this case $Smith_1$ can stand before him undressed. The doctor goes on then to discover how he is behaving in the various aspects of his day to day life. He is very much interested in the regularity and rhythms of $Smith_1$'s living. He may find $Smith_1$ so worried that his usual rhythms of living are disturbed. He may stammer, he may sleep or eat poorly and when confronted with certain matters to which he is sensitive, his pulse, respiration and capacity to perform regular rhythmic activities may be upset. The doctor may have a social worker's study of $Smith_1$'s effects on his neighbors, family and business associates. He may discover that $Smith_1$ has not the capacity to carry the load of work with which he is faced and he may even discover that $Smith_1$ has become a menace to the morale or effective living of his community and his family. Here we see the doctor in his examination of $Smith_1$'s mental condition is concerned with similar mat-

ters as in the physical examination, except that the subject of his examination is different. In the first case he was examining the behavior and substance of tissue, organ or system—in other words, a part of the body. In the second case he was examining the behavior and substance of the whole body, or Smith₁ as a person. The essential difference between the two examinations then is not that they are on two different levels of abstraction—the tangible substance, material, as contrasted with behavior, an intangible abstraction of substance. It is between the part as contrasted with the whole at the same level of abstraction. In both cases the primary interest is in behavior in relation to needs for survival and productivity—part-body health or part-body disease, that is, physical health or diseases; whole-body health or whole-body disease, that is, mental health or diseases.

There is, however, one very important difference between the part-body and the whole-body that results in such wide differences in the way they behave and in how they must be dealt with, that these fundamental similarities are likely to be obscured. The part-body, taken as such, is relatively consistent in its relationships and conditions of living. The heart has neighbors that are almost always in the same relation to it both spatially and functionally. It has constant temperature, constant pressure, constant chemical milieu, etc. The whole-body, on the other hand, experiences continuous changes in its surroundings—different people, different climate, different jobs and different threats, different opportunities for using individual differences, etc. Its variability depends not only upon its changing milieu, but upon its internal condition, fatigue, infection, sleep, nutrition, etc.

Thus while fairly definite expectations can be established and predictions made for Smith₁'s heart, pulse-rate, blood pressure, chemical, physical and cytological blood-content, and deviations can be expected to indicate a threat to his survival, productivity and satisfaction, there can be no such degree of definiteness about expectations as to the behavior or variation of behavior of Smith₁ as a person. Smith's heart may suffer a serious disease and be expected to be limited in function for that reason. Smith₁, as a person, may experience supposedly devastating catastrophes, and yet find a situation that allows them to become an asset for him in survival, productivity and satisfaction.

For this reason, there are less hard and fixed rules for Smith's behavior. The order of the day must always be in line with the circumstances at a date. That is why the over-definite rules for his mental health in the abstract can lead to behavior that is not conducive to survival, satisfaction and productivity. That is why mental hygiene, which is nothing more nor less than the accumulation of fact, experience, theory relating to the maintenance of mental health (behavior of Smith₁, conducive to survival, satisfaction, productivity) has to contain more *ifs*, *buts*, and *ands* and other qualifications. This greatly amplifies the number of Smiths that have to be allowed for when we deal with 'mental' as against 'physical' problems.

It is for this reason that rules which have proved their worth for Smith₁ may not be valuable to Smith₂, etc. It is thus that certain over-elementalized rules which go under the label of *principles of mental hygiene* may be detrimental in practice. It may be most important for Smith₁ to keep certain aspects of his living free of canalization or habituation. Smith₂ may need to have these very aspects automatized. Thus

because freedom of expression has produced some highly evident values it has been credited with general value. Because automatic activity is less deliberate, it has been forgotten that it has also produced especially valuable results. It should be kept in mind that the exclusive provision for one or other is disintegrating or constricting and that survival, satisfaction and productivity depend upon a balance of both automatic and free action differently localized according to the differences in make-up and situation of Smith₁, Smith₂, etc.

It has also often been considered that the enhancement of Smith's mental health (survival, satisfaction and productivity) is the exclusive concern of certain professional groups as contrasted with others. Let us test this assumption to discover where Smith's mental health is being influenced and what professions have a responsibility for it. First there are certain places where his talents are being developed, and also certain places where they are being expressed. These are helping or hindering his survival, his productivity and his satisfactions. Secondly there are places where the breakdown of his behavior is becoming evident. In the first group are the school, medical and health services, recreation work, church, etc. In the second, there are facilities for helping Smith when he becomes so irrational, so impoverished and so lawless as to threaten his survival, productivity and satisfaction. It is in all of these that Smith's mental health has to be taken into account professionally and that the facts and theories bearing on the maintenance and recovery of mental health have to be used. This is giving a very broad scope to mental hygiene, so broad in fact as to be disturbing, but that breadth is not simplified by denying it. It can not be reduced by using limiting words, it can only be accepted and coped with. Consequently because of its breadth, mental hygiene can not be encompassed by any one profession. It can, however, get leadership from those professions that see the most acute manifestations of Smith's needs. If any profession serving the personal needs of Smith defines its objectives in terms that are contradictory to helping this Smith₁ develop and express his aim of survival, productivity and satisfaction, it may well seek critically for the evidences of its usefulness.

There is evidence that these various agencies are moving in this common direction. As they have sought more and more to serve Smith at as early a time as possible, they have tended to meet on common ground. They have at times tended to be proprietary about this ground because it emanates from their original preoccupations. They forget that this Smith₁ is an integrated person, a combination of experience from which all his activities are derived and that in entering this background of Smith they are no longer in their own specific territory, but in the realm of Smith with which many professions are concerned and which can be modified safely only by taking into account many possible outcomes falling specifically into different professions.

By centering attention on this Smith₁ then, we can be led away from this confusion of 'physical' and 'mental' and can resolve some of the professional conflicts that disturb him as well as those professing to help him.

Smith is many times burdened by this same confusion of the different levels of abstraction and by two-valued orientations about facts on the same level. There is, for example, a wide belief sometimes easily corrected by observation that a person

is either mentally deficient or he is not. Mental deficiency is, in fact, only the reciprocal of a wide variety of limitations to many different functionings. A person of very low 'intelligence' cannot survive by his own efforts even under the best conditions. As various other handicaps increase to burden him, his specific inability to deal in abstractions ('intellectual' limitation) need not be so great but will still insure his failure. There thus comes a point where the other handicaps are so great that the best of capacity for abstraction is still insufficient to insure his mental health. At that point he is no longer considered mentally defective. Thus there is a wide range of intellectual incapacity that may contribute to social failure. For innumerable gradations there are innumerable Smiths, some of whom may have a chance to alter their status of mental sufficiency by altering the reciprocal burdening conditions. In the city Smith₁ may fail, whereas in the country he may not. When married he may be insufficient, but not when single. At one date he is different from another time. There are no mentally defective persons as such, there are only persons whose survival, productivity, and satisfactions fail or are threatened for a variety of reasons—of which limitation of those capacities characterized as 'intelligence' is one.

In conclusion let me list some of the word traps that have obscured the professional functioning of those who would presumably further mental health.

1. A community health, welfare or educational agency encounters many evidences of inadequate behavior in its work and so expresses a need for a psychiatrist. (a) Now, in fact, all such problems are not within the range of a psychiatrist even at his broadest. Some are right up the alley of the agency itself. But the agency is, in fact, saying that *all* problems are psychiatric because the most obvious ones are. Some of these problems are semantic in origin and within the scope of the agency itself. (b) Psychiatrists are equated by the agency whereas in fact, psychiatrist₁ may run a hospital well, psychiatrist₂ may be a whiz in the treatment of gross psychoses, psychiatrist₃ may have shown unusual capacity for meeting the needs of the man at large in the community, etc.

2. Statements made about a family agency in the 1920's are carried over into judgments about family agencies in the 1940's, although it is well known that the Family Agency¹⁹²⁰ is very different from the Family Agency¹⁹⁴⁰.

3. Statements made about social work₁ as suggested by the social case work field of 1940 (social work in the narrower sense) are applied to social work₂ as expressed by the terms as used in the National Conference of Social Work (in the broader sense including much medical health and school work).

4. An agency director refers to 'my board' as if 'my' meant to 'serve me', rather than to 'govern me', i.e. to serve the community. Thus many boards languish.

5. 'Education' is identified with a set of statements, methods of procedure, etc., that may have at some time had something to do with forwarding the development of individuals in the direction of survival, satisfaction and productivity. It is forgotten that education is to be judged by actual outcome of survival, etc.

6. *Behavior problem* as a term is construed to represent not a problem in the development and expression of the particular person for survival, but rather to represent behavior that stirs up an adverse reaction in someone else.

7. Certain principles of general semantics are rejected because something else can be shown to be effective, ignoring the fact that no map covers all the characteristics of a territory.

8. 'Nervousness' becomes an acceptable diagnosis, because it contains a false reference to nerves (a part function) and so implies less distortion of the whole functioning of the person.

These are a few of the pitfalls in evaluation of word-fact relations that are constantly clouding opportunities to help those whose survival, satisfaction and productivity are being threatened.*

Summary: It is unfortunate that mental hygiene, a body of facts that should contribute to the survival, productivity and satisfaction of people, may thus through semantic confusions produce an opposite effect. These confusions are especially evident in the contrast of the 'physical' and 'mental' in the two-valued use of labels such as *mental deficiency* and through failure to recognize changes in values attending the passage of time.

* These are some specific instances of the semantic pitfalls, 'word traps', etc., so well set forth in general by Korzybski in his seminar lectures and in *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: Science Press Printing Co., 1941).

NOTE ON THE NATURE OF 'PATHOLOGY'

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Psychiatrists and psychopathologists have spent, and in 1941 are still spending, much time and effort in trying to explain to laymen why rules of behavior which have been derived from observations of 'sick', 'disordered', or 'abnormal' individuals, have general predictive validity and may properly be applied to 'healthy' or 'normal' individuals. It is asserted by many critics in various uninformed areas that such rules do not apply to 'normal' individuals because such rules have been derived from 'abnormal' subjects. This assertion is believed by such critics to have great significance, so that it is uttered with an air of finality, and the psychopathologist is supposed to be effectively silenced by the 'obvious truth' of the argument.

As every student of general semantics should know, many 'obvious truths', when examined carefully, are found to be illusions. The 'obvious truth' in the argument in question turns out to be just one more of these illusions masquerading as 'truth'. The source of the error may be in the assumption that because a dictionary may define 'abnormal' as meaning 'unnatural', although some dictionaries do not, conditions properly termed *abnormal* or *pathological* are therefore 'unnatural' or 'unrelated to normal' in the way that the leprechauns of folklore are unrelated to zoology. Clearly enough, reports concerning activities of leprechauns would have no validity for zoology, but is there any fact in the assumption that 'abnormal' or 'pathological' processes are 'unnatural' in the same sense that the leprechaun is? An extensional analysis readily shows that the latter assumption is contrary to the facts of the nature of the processes we term *pathological*.

The following examples of activity which might be termed 'unnatural', 'abnormal', or 'pathological' are easily seen to be as strictly 'natural' as any phenomena which could be called 'normal'.

The phenomena of inflammation are perhaps the first 'pathological' activities studied by a medical student. As an experiment, the tongue or mesentery of a frog is placed where it can be viewed through a microscope and the flow of blood through the lingual or mesenteric vessels is watched. Presently, the tissue is irritated with a drop of xylol which is applied to it. Inflammatory changes are observed. The blood corpuscles are seen to move more slowly. The tiny vessels dilate so that more corpuscles are accommodated. The leucocytes linger and cling to the capillary walls, then pass through the walls to the surrounding area. On a larger scale these phenomena cause local warmth, swelling, and redness, cardinal signs of 'inflammation', a 'pathological' or 'abnormal' process which is distinct from everyday 'normal' activity.

The clotting of blood is another activity which by following the above definition would be characteristically 'pathological'. The process of clotting is a complicated one. The clot is held together by threads of fibrin, a substance which is not present, as such, in the blood of 'healthy' individuals. However, the fibrin is formed from fibrino-

gen which is present during 'health'. The fibrinogen becomes fibrin under the action of thrombin which is another substance not found in 'health' but which is derived from prothrombin which is 'normally' present. The prothrombin becomes thrombin in the presence of calcium ions when acted upon by materials released from injured tissue cells and blood platelets. Of course, in 1941, not all is understood about blood clotting nor about inflammation, and the above accounts may be disputable, but the facts as they affect the following argument are clear enough.

It will be noted that although tissue inflammation and the clotting of blood are phenomena which are not found in 'normal' or 'healthy' tissues, the materials or structures involved in their production are 'normally' present. This point should be clearly recognized. Furthermore, it should be noted that in the case of the clotting of blood, the fibrinogen and prothrombin are not, in 1941, known to have any function in the body *except* to make possible the clotting of the blood. Clotting is a process of very great survival value in spite of being 'pathological'. The 'normal' individual possesses, within his blood plasma, materials which will not be of value to him as long as he remains entirely 'normal'. Only after a 'pathological' process begins will these regularly present materials be useful to him.

It is essential to recognize that 'abnormal' phenomena can take place without the aid of any 'unnatural' or 'abnormal' structures or materials. The 'normal' organism contains within itself the materials and structures necessary to produce so-called 'abnormal' or 'pathological' behavior. In the experimental production of inflammation, the xylol took no part in the inflammatory process. The xylol merely produced an injury to which the inflammation process was the organism's response. Cutting of tissue leads to the response of clotting, but the cutting instrument takes no part in the production of fibrin. In general, so-called 'pathological' behavior is the response of 'normal' organisms to injury. The recognized 'mental and nervous' diseases, as well as the more ordinary personal maladjustments, are in their basic sense, such processes as tissue inflammation and blood clotting, 'normal' reactions of the organism—of the 'personality' if you prefer—to unusual or 'abnormal' internal or external conditions. The conditions may be 'abnormal', the response is not.

In 1941, the mechanisms of so many forms of 'pathology' are so very largely unknown that one may not make any assertion concerning *all* types of 'pathology'. One may, however, follow the lead of Korzybski and be on guard against identifying the conditions represented by such words as *pathological* or *abnormal* with those which may be called 'unnatural' or 'unrelated to normal'. Whatever the intensional implications of the term *pathological*, extensional examination shows that the two fundamental 'pathological' processes discussed above, are closely related to 'normal' organismic function. To those who claim that generalizations about human behavior derived from clinical practice may be disregarded while working with 'normal' individuals we may say: 'You must first prove that our clinically derived rules are invalid. Prove, if you can, that the "pathology" displayed by our patients is not solely made up of "natural", "normal" responses to injury, or injuries.' Such proof will not be found possible. In fact, we can confidently predict that as each form of 'pathological' behavior on the psycho-logical level is explained, it will be found to be as closely related to 'normal' behavior as tissue inflammation is to 'normal' tissue physiology.

SHORT COMMENT ON GENERAL SEMANTICS IN CHILD GUIDANCE WORK

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I have been engaged in an attempt at setting down a few of the notions derived from my study of general semantics, notions and techniques which have been particularly useful to me. These inevitably tie together and are only arbitrarily presented as discrete. I work in the general area designated 'child psychiatry', mainly in a child guidance clinic but to some extent in a private practice. That my viewpoint on nearly all case situations has been modified by my study with Korzybski goes without more than mention.

First of all, there is the illumination that accompanies the actual realization that many of our everyday diagnostic terms are not 'entities' but are abstractions (and often of an unrecognized high order). I have known for years that the designation of *dementia praecox* or *psychoneurosis* in no way altered the facts of the case situation. And yet, in daily clinical work that 'knowledge' remained unappreciated and unapplied. The labels, *stutterer*, *anxiety neurosis*, of *rejecting parent*, of *homosexual*, etc., that my colleagues and I have in all honesty hung on individuals, have probably in a psycho-logical, although extra-legal, way 'contributed to the delinquency of minors.'

Nor is this knowledge only in my own 'thinking'; occasion has arisen to make specific use of it in relation to cases. Mrs. S., the young mother of eight-year-old John, viewed herself as an all-round failure and seemed unresponsive to my endeavors to bring about any change of attitude in her. She summed it up in the words: 'I have been a failure as a mother.' Pointing out that *mother* was a term applicable to but a limited aspect of her relationships as a functioning human being and that even that aspect was not at all identical from day to day, seemed to reach a responsive area. In rather short order, and with a different expression and attitude, she was telling me of her successful achievements as a 'wife', 'neighbor', 'friend', etc.

Mrs. R. condemned herself as a 'coward'. After I had required her to extensionalize the word, she came back later with the statement that this point stood out and was helpful above everything else in our two interviews. So I might go on with simple daily work illustrations of the power of a word, with its attendant 'halo' of past usages and accompaniments.

Probably another of the most usable notions for me has been that of 'change'—the 'eternal dance of the colloids' (electro-colloidal processes). This, too, I have known for a long time but I had been quite without appreciation of its usefulness to certain patients reaching out for help. No need to cite cases beyond mentioning that twice I have seen this singled out as apparently the most effective part of an interview.

For some years I have been an adherent to the general viewpoint of the significance of the thalamic zone in the alteration of behavior. Many times it has seemed to me

that the simplified explanation of the great part played by the interaction of thalamus and cortex has been of great assistance. A patient does not need to know a vast deal of anatomy-physiology to visualize something of the *modus operandi*. Now, with the application of general semantics to these previously known facts I attempt to aim my discussion to reach the patient in this 'vulnerable' region. Unless the thalamus is reached, the words remain 'meaningless blah'—if they do reach it, something happens.

Korzybski has well pointed out how an interpretation (explanation of a mechanism) may produce results and yet not necessarily be a 'true' interpretation. As a matter of fact, this point has proved of immense help; I do not approach cases now with as much doubt as to the validity of my views. These views no longer seem to need to be 'true'—they must simply be honest in the light of my present information. The satisfaction and assurance that come in this way to me as a would-be therapist probably are in themselves therapeutic.

In these ordinary day by day patient-physician relationships, general semantics finds an application, here a bit and there a bit. Nor am I left with a feeling that I am having to throw overboard a wealth of neurological, psychiatric, etc., 'knowledge' previously rather laboriously acquired.

SOME IMPLICATIONS OF GENERAL SEMANTICS METHODOLOGY FOR SOCIAL WORK

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The application of the theory of general semantics in the specialized field of Social Work calls for the adoption of a new attitude toward already-existing knowledge in that field rather than for the acceptance of a new and different theory concerning it. Already many of the principles of this general theory of evaluation are more or less in use by social workers, but without that awareness of their importance and general applicability which formulation as a system with appropriate techniques can give.¹

The case worker has many resources at her command but the most basic of all is language. It is by means of words that the client states his problem, that the situation is analyzed, and that solutions are offered.

The skillful case worker realizes, or should realize, however, that her client's description of his problem is *not* the problem as he lives it. If the description of poverty were poverty (were 'the same thing' as poverty), it could be destroyed simply by destroying the description. The fallacy of identifying a given condition with the words describing it—i.e. acting as if it were the same—is obvious. It has also been found that before assistance can be properly given, a social investigation must be made. This is done in the hope of finding important factors which may have been left out, overlooked or improperly represented by the client, and also to consider the client himself as a part of the total situation. The social worker is thus attempting to gather sufficient information so that she may first make her diagnosis and then offer possible courses of action. If this process of observing, describing and judging the relative importance of the 'facts' is termed *evaluation*, it follows that the more adequate the evaluation, the more satisfactory will the outcome be. The essentials for maximum predictability, i.e. proper evaluation, are embodied in these three non-aristotelian premises underlying the relating of words to facts:

1. *Non-identity*: A word (or series of words, a description, etc.) is *not* the object, feeling, situation, judgment, etc., described.

2. *Non-allness*: A word, description, etc., does *not* include *all* the characteristics of the object, feeling, situation, etc., described. A generalization cannot include all of the characteristics of a given situation. It may include 'enough-for-practical-purposes' or it may not.

3. *Self-reflexiveness*: A word or a series of words may be used on different levels of abstraction to talk about or to describe a word or word-series. This multiordinality of language is reflected in the multiordinal mechanisms of the human nervous system;

¹ General semantics, the *modus operandi* of the non-aristotelian system as formulated by Alfred Korzybski and expounded in his seminar lectures at the Institute of General Semantics. For explication of the leading terms and formulations of general semantics used in this paper, see Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

thus, the client may show guilt over his guilt, anger at his anger, anxiety about his anxiety, etc.

The social worker properly denies that the client's description of his problem is the problem itself. Furthermore, she correctly affirms her belief that the description is less valid as a working tool than is the observation of the situation itself, and she thereby begins to establish a hierarchy of values or levels of abstraction proceeding from 'things' (observations of people and situations, etc.) to descriptions and inferences. She also recognizes that in any situation there are different degrees of remoteness from it. For example, a piece of gossip, traced backward, tends to come nearer and nearer to the life facts upon which it was based. Traced forward, it may become gradually so changed that finally it bears no resemblance at all to its original source. These steps or degrees of remoteness may be termed 'levels of abstraction' and if clearly recognized as such should never be considered identical with, or the same as, each other. The abstractions referring to direct experience are termed first-order abstractions; lower and higher order abstractions refer to words and symbols. The hierarchy proceeds from (1) the un-speakable scientific event (process level) with an infinite number of characteristics; to (2) the also un-speakable 'objective' level of sense perceptions (for instance, a desk or a toothache) as directly experienced and therefore (since we can not perceive all aspects at one and the same time) covering not-all the characteristics of the object, feeling, situation, etc.; to (3) the verbal level (description of the object, feeling, etc.); and finally to (4) a series of inferences (generalizations, etc.) about the abstractions of lower order, each of these inferences leaving out further characteristics.

As reminders of the tendency of words to distort evaluations, to represent only a partial picture of the facts, etc., the five extensional devices of general semantics are suggested for daily use. *Indexes* call attention to the individuality of objects, situations, etc., as well as to their similarity: i.e. client₁, client₂, etc. Indexing also keeps us aware of the different levels of abstraction on which our statements are made: of our multi-ordinal mechanisms, i.e. statement₂ about statement₁, etc. *Dates* compel recognition of the fact that many symbols (words) and statements do not have permanent validity: Social Work¹⁹¹⁰, Social Work¹⁹⁴¹, etc. *Etcetera* is a reminder that all the characteristics of an object, feeling, or situation are not included within the symbols that are used to represent it. *Quotation marks* show that a word is not to be accepted without qualification, that it may have structurally misleading implications: for example, it might be the word-choice of another person. *Hyphens* serve as reminders that some terms (like 'body' and 'mind' or 'intellect' and 'emotion', 'heredity' and 'environment', 'space' and 'time') which are customarily thought of as two separate entities are more correctly spoken of as a single unit: 'space-time', 'body-mind', 'intellect-emotion', etc.

Relationship is extremely important in connection with these premises. The 'meaning' of the word *desk* or the word *fear* is derived from its being placed in a context so that its relations to other events (things, persons, etc.) are made clear, and this structural connection between the symbol (word) and the silent levels of the 'object' and the process is the only form of knowledge possible. Hence the importance of the client-worker relationship. Hence the need for placing many terms in a context

(or in a relationship situation) before they can be adequately interpreted as to content on the level of life facts. Hence the 'concept' of the organism-as-a-whole-in-the-environment, as showing the necessity for being aware of the indefinite number of factors which influence a given situation.

GENERAL SEMANTICS AND THE SOCIAL WORKER

The study and use of the principles of general semantics can be helpful to the social worker in the development of her personal orientations and adjustments as well as in her treatment of the client. The view of the client taken by the worker is very important: if this view is clouded or distorted by personal prejudices, ignorance, dogmatism, authoritarianism, etc., it is to that extent a hindrance to good case work.

It seems clear that a person whose business is the better adjustment of others should herself be well-adjusted. This means that a social worker should cultivate flexibility and adaptability as to time, situation, persons, etc. She must be able to maintain as clear a perspective as possible without the interference of rigid moral doctrines, infantile identifications, deep unsatisfied personal needs, etc. A 'balanced' or 'mature' person is aware of her own mechanisms or distorting factors and so has achieved a certain amount of control over them. The 'immature' person is not aware of her mechanisms; for instance because of this she may mistake her interest in social work as a profession. Instead of contributing to it, she really wishes to gain something from it—to work out her frustrations, for example, instead of helping others to work out theirs, or to assume a dogmatic authoritarian role as compensation for her feelings of inferiority. She may easily 'over-identify' with her client, which, as will be pointed out later, impairs treatment.

By a conscientious and prolonged study and use of the three fundamental non-aristotelian premises and the extensional devices, by training in consciousness of abstracting, and by constant efforts to formulate her evaluations in language which is more accurate because more similar in structure to the facts, specifically unpredictable but generally most constructive results are obtained. Among these results the acquisition of better 'mental-emotional' balance, or a more adult point of view is often noted.

For example, use of the indexes makes it possible to show, at one and the same time, the individual and the class, or to illustrate and to promote the awareness of the established fact that similarities and differences are co-existent. The intensional method of orientation by verbal definition which covers only similarities produces a splitting in that electro-colloidal, functional, and inter-related whole which is our nervous system when generalizations are made without differentiating observations but only in terms of the intensional generalities 'man', 'client', 'disease', etc. This type of evaluation by verbal definition is predominantly cortical. Because the social worker actually deals with living individuals and not with descriptions of individuals, the intensional method does not provide for the differentiation and so the integration of thalamic and cortical functioning which is required by the facts of the situation. To do this, extensional methods of evaluation must be practiced and used; for instance, use of the *indexing*, *dating* and *etc.* devices, introduces neurological delay of reactions and so involves thalamo-cortical integration in our evaluating reactions.

THE SOCIAL WORK RELATIONSHIP, TREATMENT

The field of social work is commonly divided into three areas: social case work, social group work, and social welfare planning. Particularly in the first area, treatment is today intended to assist the culturally adequate adjustment of an individual to his environment. This emphasis upon the recipient of assistance as an individual is comparatively new. The late nineteenth century attempts to analyze 'the causes' of poverty and dependency were followed by the beginnings of more accurate descriptions of the individual who was characterized as 'poor' or 'dependent', as well as of the relationship which he bore to his environment.

Mary E. Richmond, who is generally considered to have ushered in this new era of 'thinking' specifically in terms of the individual and his immediate environment, wrote in *Friendly Visiting Among the Poor* (1899), that the friendly visitor was prone to forget, in working with individual poor families, that these families are also part of a neighborhood and of a larger community. She also said that visitors were likely to exaggerate the importance of those 'causes' of poverty which originated in the individual (laziness, intemperance, etc.) or, equally, to exaggerate the 'causes' which were external to him (defective legislation, bad industrial conditions, etc.). She concluded that somewhere between the two extremes lay the 'truth', and that the personal and social causes of poverty acted and reacted upon each other in such a way that their separation was exceedingly difficult if not impossible.

One rather inevitable result of attempts to scrutinize the social situation and personality of the client was the effort to articulate 'principles' and 'standards' of social work. The report of the Milford Conference (1929) on *Social Case Work: Generic and Specific* carried on Miss Richmond's earlier (1902) search for the essential aims and methods of social case work which were more or less alike in every type of service. This report referred to the 'norms' of human life and relationships and to deviations from them which the social worker must recognize in her diagnosis and treatment. Cannon and Klein in their *Social Case Work* (1933) also referred to 'norms' which must be used in measuring the deviations that create a situation appropriate for social work study and treatment. These norms are little more than fictions, incapable of precise definition. Examples of the deviations from accepted standards of 'normal' society listed by the Milford Conference were alcoholism, crime, delinquency, illiteracy, pauperism. The Conference considered that the 'norms' associated with education, the family, marriage, personality, sex and work were typical for social case work. These norms were considered as patterns evolved in nature or social life, and as *standards deliberately produced by human 'thought'*.

A social worker must be well aware of the validity of her own standards and of those of the culture in which she and the client are associated. Their fictional nature has already been suggested and she must guard against believing in them *as if* they were everywhere and forever absolute. It is a distorting semantic tendency, also, to treat a person *as if* he were completely isolated from the world and from other persons, or to act as if *either* preventive *or* palliative measures alone would work the miracle of abolishing or reducing dependency, etc.

There are three main implements of social case work: the interview, the case history, the client-worker relationship.

It has already been suggested that the interview consists of a process of abstracting. The client describes his situation as he sees it, colored by countless conscious and unconscious factors, incapable of giving a total picture. The social worker listens to (abstracts from) his story and, if it is put into the case record, it becomes an abstraction of a higher order because the worker cannot reproduce the story, exactly even if she were to have it recorded by a dictaphone or made into a talking motion picture at the time of the interview.

Aware of the partial, non-allness character of the interview, the social worker attempts to gain insight into the client's personality so that she may estimate the influence of his personality upon his story and his problem. She no longer 'thinks' exclusively of his wants and needs, but of him himself and his life.

No form of recording 'is' the interview or covers 'all' the factors of the interview. Selection, evaluation, abstraction inevitably enter in just as they did in the interview itself. The worker must distinguish between her need to produce as 'perfect' a record as possible and the treatment purpose of the recorded material. Judgment as to the 'goodness' or 'badness' of a record must take into account the personality, experience, and training of the worker; the personality, knowledge, and attitudes of the reader; the circumstances under which the material was gained, recorded, and is to be used, and so on. These considerations form part of the context against which the 'meaning' of the record becomes clear.

Most writers agree that the material to be recorded should be selected for its relevance for diagnosis and treatment. How is this relevance to be determined when, especially in the early stages of the case development, there is very little information at hand and a most incomplete picture of the goal which is sought? The only possible answer emphasizes the need for cultivating a flexibility of attitude and an awareness of the possibility of omitting important details. The record must be written without full knowledge of the case-as-a-whole and without knowing exactly what details may or may not be important in the long run. The attributes of a 'good' record—brevity, accuracy, color, clarity, objectivity, etc.—are essentially indefinable although they may be described at some length. They must be blended in the record in such a way as to show emphasis without producing actual distortion. The record-as-a-whole-and-in-use must be the criterion for this blending, and even this statement has no 'meaning' except in specific situations or contexts.

In speaking of the client-worker relationship, one is mentioning something which was originally not considered at all. Later, the existence of this relationship was recognized but the professional ideal of 'objectivity' required that its place supposedly be reduced to an absolute minimum. As long as the case-work situation was defined in the additive manner as 'one person talking to another', the client-worker relationship had little significance. When the situation was analyzed more closely, it appeared that there were repercussions upon the participants in the conversation which were to be taken into account as well as the physical setting, the client's problem, and so on.

Since the reaction of the client to the social worker is his reaction to a specific person in a specific setting, the worker is therefore helping to determine the client's response. Hence the worker cannot understand the client unless she understands herself. In this very close relationship, the worker cannot afford to interfere with the client's

expression of himself. She cannot press too hard for facts, she cannot impose upon him her own feelings or desires, without impairing the relationship. The value of the relationship with a worker often arises from the differences that exist between her and her client, although there may be certain similarities present at the same time. The insecure client may gain some sense of adequacy if allowed to 'identify himself' with a secure person. For the moment, at least, he becomes adequate—even though by proxy. It is the worker's responsibility to recognize this need and its fulfillment, so that she may direct the relationship in such a way as to help the client without allowing herself to become over-identified with him.

The tendency of social workers to think in terms of levels which limit the treatment of a specific individual often means that certain social measures are totally disregarded which might otherwise be effectively utilized. To describe the providing of a job as a 'superficial' level of treatment may have 'meaning' if by it is meant merely an effort expended in modifying the environment. In the same way, 'intensive' treatment might be said to imply a treatment opportunity that had deep significance for the individual—such as a release of feelings that had resulted in a new self-acceptance and self-understanding.

These definitions are highly artificial, however, for in practice the provision of a job may have deeper therapeutic value than extensive psychotherapy. These definitions had little if any reference to the life-value or 'meaning' of certain types of services to the client and so contributed little toward effective treatment. Countless possibilities of help to the individual are shut out by the limiting manner of evaluation illustrated here, or by the habit of reacting in terms of 'either-or'. The substitution of the orientation of different 'levels of abstraction' is decidedly constructive.

The case work process has been traditionally divided into investigation, diagnosis, and treatment—each assumed to follow the other in orderly sequence. Now, however, it appears that this process cannot be properly evaluated except as-a-whole, made up of interrelationships which, in turn, have interrelationships with the other 'wholes' about them. The separation of the process into three distinct parts is arbitrary and artificial; it amounts to a false-to-facts representation. Greater emphasis may be laid upon one or another aspect of the process-as-a-whole but the others are always present and related to it.

It has already been pointed out how, in the interview, a social worker seeks to provide a background against which the specific problem may be measured. There is also a limiting and defining background against which the social worker operates in treatment: community, socio-economic, and cultural factors determine what her methods and aims will be.

TERMINOLOGY

The terminology of social work contains much of interest if regarded from the point of view of development of a language similar in structure to the facts described. *Poverty* and *the poor* were for centuries considered to be absolute terms. Upon the fact that closer analysis of these terms was necessary, rests the whole foundation of social work today. Individualization of the client, knowledge of the environment

and of the interrelationships existing between it and the individual, the increasing 'scientific' tendencies in social work, and the professionalization of social work which the emergence of principles and techniques has made possible—all of these are dependent upon a going-beyond the once 'final' words, *poverty* and *the poor*.

Social work now appears to be growing more 'scientific' in many ways—that is, proceeding by more 'objective' methods and standards, but since its essential characteristics involve individual and social relationships, the possibility seems remote of its ever becoming as 'scientific' as the physical sciences. In so far as this is true, it means that social work, instead of developing primarily as a separate field with its own 'concepts' and 'standards', must be dependent upon other more exact sciences for its foundation. Upon this base the peculiar techniques and viewpoints of social work will be founded.

'Poverty' represents a higher order abstraction and is a *multiordinal* term. Like 'dependency', 'poverty' has numerous contextual 'meanings'. The two-valued orientation implied in 'adequate' and 'inadequate', and in 'adjusted' and 'unadjusted' is misleading and unsatisfactory.

The moral, ethical and religious dogmas which have so long been attached to many of the terms of social work are quite obvious. The use of 'poor person', 'client' and finally of 'individual' is an attempt to avoid the unfavorable semantic reactions to 'pauper' in which many persons were educated. 'Bastard' is a term now almost archaic, supplanted by 'illegitimate child', which, in turn, it has been suggested should be replaced by a phrase indicating that this 'child born out of wedlock' is really a 'child of illegitimate parents'. Again, to avoid the unfavorable implications of the terms, some states have now substituted 'Board of Public Welfare' for 'Overseers of the Poor', 'Infirmary' for 'Alms-house', and eliminated 'pauper' from the statutes entirely.

The terminology of social work cannot lead to realistic 'thinking' (proper evaluation) so long as it contains words and expressions with structurally false-to-fact implications.

Space does not permit more than a brief word on the application of principles of general semantics in more restricted areas, such as family welfare or child welfare work. An efficient technique is provided by these principles for dealing with infantilism in adults which often is a source of family difficulties, and with behavior problems in children. In many instances, use of extensional methods by a social worker will prove a helpful experience to the client who might easily learn to follow this example in analyzing other problems.

The group worker, guiding and encouraging the growth of individuals through group experience, is helped by these principles to become a more effective leader.

In social welfare planning, the necessary co-operation of agencies and individuals is often hindered by a misunderstanding of methods and aims. This blockage gives way, to some extent at least, with a recognition of the meaning-difficulties inherent in the specialized terminology used by the various groups concerned. Planning also raises problems of evaluation and prediction: What are the essentials to be planned for? What are the factors to be considered in making this plan? These and similar problems may be helpfully analyzed according to the methods of general semantics.

CONCLUSION

This paper has attempted to suggest how many of the principles of general semantics are already in operation in the field of Social Work, in an unsystematized way, and what their contribution to that field has been and might be. In broadest terms, the 'progress' of social work has occurred—as it has in other fields—by adaptation of the best scientific knowledge available at a given date and by developing an increasing awareness of 'the obvious' and of our unconscious assumptions. Elementalistic terms like 'poverty' have been re-examined; causes of causes of causes, etc., of 'dependency' have been found which—if carried far enough—lead directly to the whole social order. The emphasis has changed from personal causes of 'pauperism' *alone* to external and impersonal causes *alone*, and finally to a combination of both which had been separated artificially due to *either-or* orientations, elementalistic terminology, etc. The definition of 'environment' or 'setting' has been stretched and broadened until it seems literally to have no limits. Even in so comparatively small a part of social case work as the interview, the processes of abstraction and evaluation are found to be highly important. Just as the attributes of the case record form a whole which is not to be disentangled except for purposes of clarification, so the case work process must be considered as-a-whole—each part related to every other and to social work itself. The importance of proper evaluation on the part of the case worker has been pointed out, and one way of achieving more nearly 'correct' evaluations through the elimination of harmful identification caused by confusion of orders of abstraction has been suggested.

These and many other instances of the indirect or unwitting application of principles embodied in the system of general semantics may be found in social work theory and practice. It may well be argued that if such 'progress' as has already been made in the field of social work is based on the unconscious use of these principles, still further 'progress' may be hastened and made to touch on more aspects of that field by the direct and conscious application of this general methodology.

Finally, it must be said that the problems with which social workers deal are by no means 'solved' by the adoption of a new structurally correct terminology or a new viewpoint. The non-verbal facts of the needs of poor, sick, aged, etc., individuals have changed very little, although our understanding of them has gone through varying degrees of evolution which is reflected in social work training and practice. To this evolution, the general theory of values and the extensional method with which general semantics is concerned seem able to contribute heavily.

SOME APPLICATIONS OF GENERAL SEMANTICS ON A WPA PROJECT

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This paper reports some applications of the formulations and devices of general semantics in the work of WPA Speech Research Project No. 1448, in Los Angeles, between November 1935 and January 1937, and is documented from private records made at that time.¹

The California State Department of Education sponsored this project and appointed its director, the writer. The aim of the project was to secure and prepare bulletin-materials on *Speech in Education* at primary, elementary, junior high and senior high school levels of instruction in seven major speech fields.² The Federal Government supplied some forty thousand dollars in wages for WPA client-workers. The quota of personnel averaged forty-five persons although some one hundred different workers were contacted during the life of the project.

I

The director, when preparing to open the project, used the following orientations of general semantics:*

¹In 1934 the writer had learned something of the work of Alfred Korzybski by a three-months reading of his book, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Lancaster, Penn.: The Science Press Printing Co., 1933). The following year, she met Count Korzybski during his summer seminar at the Cora Williams Institute, Berkeley, California, and subsequently studied with him at two seminars in Los Angeles in the fall of 1935.

²*Speech in Education*, a bulletin-guide: the report of WPA Speech Project No. 1448, compiled by the project's director, Vocha Fiske, with Donald Sample of the project's personnel, acting editor, and Dean Ray K. Immel, School of Speech, University of Southern California, honorary editor. (Bulletin No. 9, May 1937, California State Department of Education, 86 pp.) Also, *Seven Sub-Reports for Speech in Education* (mimeographed): compiled by Vocha Fiske from reports by Lillian G. Avery, H. R. Campbell, H. J. Hogan, Wm. J. Perlman, Harold Slocum, Beulah K. Wales, Chloe Zimmerman and edited by Burgess Shumway. (Archives of the State Department of Education of California at Sacramento, also in the Archives of the WPA at Washington, D. C. and at Los Angeles, California, 373 pp.) See section v of this paper.

* *Editor's note*: Here and elsewhere in this paper, the author assumed the congress audience's acquaintance with the non-aristotelian system and the principles, methods and techniques of general semantics. For the benefit of readers who are not so familiar with Korzybski's work I have added an occasional short footnote but it is impractical to attempt editorial elucidation of the fundamental formulations of the methodology which were so effectively applied by Miss Fiske in directing the project. Readers seriously interested in the important psycho-logical and socio-economic implications indicated in this report and in adapting Miss Fiske's findings to their own work in group management, adjustment, etc., are referred to the textbook, *Science and Sanity*, for study and so better understanding of the use of formulations referred to here and in sections II and III of this paper.

In connection with point three, Miss Fiske showed the diagram, 'Articulation of Speech Research Project No. 1448', used as a *structural guide* throughout the life of the project,

1. *Facts* before words—extension not intension, i.e. orientation by facts not by verbal definitions. This was applied as follows: She asked for and received an assignment as an office-clerk on a large WPA project. This was for four weeks and was done in order to get direct contact with some of the environments, experiences, reactions, etc., of WPA clients, until then unknown to her.

2. *Order* through structure, functions and relations. The director drew up a series of map-plans (diagrams) instead of written-plans of the project's probable structure, functions, and relations. These diagrams made use of both vertical and horizontal differentiation; this in accord with standard procedure but varying considerably from general practice in the way the diagrams were constructed and used. The diagrams were checked many times with the *structural differential*³ in attempts to show the natural order of evaluation, i.e. to pass clearly from simple descriptions to lower-order abstractions, to higher-order abstractions. The series of diagrams progressed from general wholes through specific parts of these wholes, then to relations of the parts to wholes and finally to relations of parts to other parts which resulted in the emergence of new, more articulated wholes.

3. *Non-allness* and the use of *etcetera*, the extensional device which serves as a reminder of the factors left out or unknown in all our observations, generalizations, forms of representation, etc. This was used especially in diagramming tentative time-production spans for units of work.

In preparing these map-plans of the work, use was also made of an important contribution of Mr. V. A. Graicunas of Paris to which Count Korzybski had called attention in his 1935 Los Angeles seminars. The 'span of control' diagram (after Graicunas, reproduced in Korzybski's paper, Part IV) furnished a basis for planning personnel-functions and relationships in co-ordination with work-production time-spans.

The personnel for the project, certified from the State Relief Administration to the WPA as clients, could theoretically be rejected for employment if found to be unsatisfactory by the director in an assignment interview. Actually, in the early stages of the project and at that time in WPA procedure, it was understood that the majority of applicants were to be accepted. This resulted in a heterogeneous group of workers with a varied assortment of backgrounds, capacities and experiences who had to be adjusted to the technical requirements of the work at hand.

A certain conditioning was common to each; every worker had recently undergone the leveling process of 'being on relief'. Each had also lacked any systematic activity for some time. All workers wanted the chance of more income than they could receive by direct relief allotment. On this project it was possible to make sixty-five, eighty-five or ninety-four dollars a month for a hundred and twenty work hours,

and supplemented each month by *functional* diagrams which were further broken down into tentative weekly time-span production units. We regret that space limitations and printing costs make it impossible for us to reproduce this and many other useful diagrams which were included in Miss Fiske's presentation of this paper at the congress.

³The structural differential, a three-dimensional diagram representing the processes and levels of abstracting, useful in training in non-identity, differentiation of individuals (horizontal), and levels of abstracting (vertical), and in the natural order of evaluation, etc. See Korzybski, *op. cit.*, Ch. xxv.—*Editor*.

according to classification. This encouraged most of the applicants to 'feel' verbally (intensionally) that they could do the work. Extensionally, first-order observations together with very limited record-studies pointed otherwise.

This situation, with persons who had to be employed for careful research work for which most of them had neither fitness nor interest, provided a challenge to test further the notions and methods of general semantics. The director had to undertake not only the responsibility, planning and execution of technical work but the exigency of personnel adjustment. The set-up was so different from any in which personnel supervisors usually found themselves (1935) that experienced personnel managers who were consulted would give no counsel. The time-factor pressed daily. The possibility of general semantics as a *generalized* method that might prove workable occurred to the writer; this on the assumption that if the process of work-production could be ordered and evaluated in relation to adjustment of the personnel, then the technical results of the project would follow satisfactorily.

II

Some preliminary experimenting led to rather regular procedures when and as new workers came to the project. Ways of introducing general semantics as *d o i n g* emerged and included:

1. An adjustment introduction to the project from the standpoint of the organism-as-a-whole in relation to its *physical environment*: A tour of the project's quarters was made by each new worker with the director, in order that he might look at the physical set-up and the general activities.

2. An attempt at application by the director of the principle that observations of *first-order facts and lower abstractions are more important* than those of higher order. For instance, little was explained verbally during the above-mentioned tour. Casual remarks by the director were designed to sharpen the worker's interest to *look*, not talk.

3. Starting of training in research work by means of practice assignments, in which *noting differences* and *dating* were particularly emphasized. As a first assignment each worker made for his own use a 'map' of the facilities, materials, and operations of the project. The first draft was done by recall, then checked by further observations and revised. The preliminary 'map' usually showed a need to note differences more carefully as well as to relate them better, in order to get a more workable map. The next practice assignments involved detailed checking of *dates* in lists of research materials. Frequently such assignments had to be done over some three or four times. The *dating* device remained an important consideration throughout the duration of the project not only as a research technique, but to make the workers more aware of its value in personal orientations and evaluations.⁴

4. An attempt to get better *predictability* by requiring workers to estimate time-production for definite pieces of work, to delay immediate action (from one day to a

⁴ *Dating*, like *indexing*, promotes differentiations, serves to prevent identifications and so mis-evaluations; for instance, identification of situation₁ with similar situation₂, with situation₁ Monday with situation₂ Tuesday. For the extensional devices of general semantics, see *Science and Sanity*, *op cit.*, especially second edition 1941, pp. xxviii-xxx.—Editor.

week) and then to re-estimate before doing. This training for predictability was undertaken not as a mere item of job analysis, but as a matter of great importance in the use of each worker's nervous system, since emphasis on predictability involves such considerations as similarity of structure in fact-word relationships, delay of reactions and so thalamo-cortical co-ordination, integration, etc.; also it involves becoming more and more conscious of factors left out, forgotten, or unknown in facing any situation (piece of work), etc., and so tends to prevent disappointments, shocks, tensions, etc.⁵

Workers were also stimulated from the start to begin to see that each had a *unique* contribution to make to the project. This was done by letting them choose, as soon as the first practice assignments were completed, a first set of work assignments to find out what interested them the most and to what work they felt they had something to contribute. These adjustment procedures required time. This varied from one to three weeks with the individual workers. An effort was made to get them away from the notion that WPA was merely 'busy work' or useless gyrations. They were given plenty to do, and as soon as possible things in which they might become interested. These practice assignments, etc., also tended to minimize the common tendency to 'burst into speech' when facing new conditions, etc. When workers had completed their first work-jobs, an opportunity came to check with them. Advantage was taken of this occasion for a private consultation with each worker lasting, if necessary, from one to two hours.

This conference with few exceptions resulted in a 'verbal deluge' of considerable psycho-logical value. Workers, fresh from the experience of 'getting on relief', talked out some of their pressures of different kinds—'emotional' overloads, frustrations, inferiority feelings, resentments, etc. Full shorthand notes were made by the director after each of these interviews. These furnished clues to individual problems of adjustment, and further study of general semantics in relation to this information indicated various possible solutions.

III

Some group 'therapy' was made possible through fortnightly meetings of the entire personnel. Such meetings required careful preparation on the part of the director. Common work and also social problems had to be considered. The job called for applying general semantics, not talking about it. Theory was seldom introduced and if so, simply. *Order* needed to be illustrated and practiced in several ways; *differences* had to be stressed and *better predictability* (awareness of the X factors represented by the *etc.* device) kept to the fore. Materials for the training came from the work itself; methods were derived from *Science and Sanity*. These comprised some of the following which, of course, overlap:

1. Helping workers to verbalize less and observe more; for instance when working out assignments, to go more frequently to the 'objective', *un-speakable*, or *silent*, level. Much use was made here of constructing diagrams rather than giving explanations in words.* In opening up new units of work we held group meetings and various drafts

⁵ As expounded by Korzybski predictability constitutes the empirical test of proper evaluation, on which adequate adjustment to life depends, etc.—*Editor*.

* *Editor's note:* In presenting her paper at the congress, Miss Fiske showed several examples of such diagrams which unfortunately, as mentioned before, our space and cost

of diagrams would be contributed by every worker after a short silent study of the specifications of the work-unit in question.

2. Developing *more sense of order* by training the eye to see clearly and quickly the set-up and relations of certain pieces of work through these visual rather than verbal forms of representation.

3. *Developing greater awareness of differences* by *indexing* and *dating* when analyzing shortcomings as the first step in working out consistent relationships.

4. Working with *dating* as a safeguard in each work-process by scanning pieces of work for omissions.

5. *Extensionalizing generalities* and high-order abstractions into lower-order abstractions when clearing up work-difficulties that came very frequently from 'word-trouble'; done by pointing out single facts first and using descriptive rather than inferential terms.

6. Showing how the use of *one-to-one correspondences* between a worker and each piece of work he did; between workers in each new situation, and between workers and the director, gave a flexible, practical approach (multi-valued orientation) in fulfilling assignments within the framework of regulation forms, lay-outs, etc.

7. Checking work-blockages for lack of applications of the *etcetera* device, representing factors left out, unknown or forgotten.

8. Checking work-blockages for assumptions of *all-ness* in a range of situations or problems where an attitude of *non-allness* was essential.

These meetings were well liked by the personnel. Workers evidently got a creative 'feel' from them, a sense of teamwork and stimulation. Each meeting lasted two hours.

Most of the personnel by the end of three months—regardless of the extent of their economic turmoil and 'emotional' disturbances—got into a fairly adequate work-stride and seemed reasonably 'happy'. Some 'cases' took four months.

IV

When the first adjustment had been accomplished, attention had next to be given to increasing the conditions that would yield volume and also speed in production. It was found that emphasis on the assumption of the *unique*, individual contribution it was possible for each worker to make, brought results. Every worker in the highest bracket of classification produced a report in some specific field of research. (See account of project production below.) Some workers in the lower brackets accomplished similar production, and the remainder, for the most part, did creditably via team and unit functioning.

limitations do not permit reproducing here. In an appendix to the manuscript of this paper the author states that twenty-one diagrams were made for the bulletin-guide, *Speech in Education* (see footnote 2) and describes some of them as follows: (1) 'The Speech Situation' diagram shows the influence of the *self-reflexive* nature of language (Josiah Royce's notion as developed by Korzybski), applied to the environmental 'envelopes' that condition the speech act; (2) 'Realm of Speech' diagram, developed from some twenty previous drafts; (3) 'Suggested Emphasis for Speech in Education in 1937' for elementary, junior high and senior high school levels, a composite developed from various previous attempted diagrams; (4) 'Steps in the Growth of the Organism' in reference to the grosser speech skills for effective procedures, made by Donald Sample, acting editor for the bulletin-guide.

After the project had been going for eight months it became necessary to help workers get ready for approaching changes: the eventual termination of the project, the possibility of getting private employment, transfer to other projects, etc. Marked affective factors again came to the fore. The *not-all* device had been employed previously, also some applications of the notion of *multi-valued* orientations, but these proved particularly effective in helping workers make this sequence of adjustments.

A goal of WPA at this time was to help clients return to private employment. At this period in the locality where the project operated, private industry had a policy of not filing work applications from persons over thirty-five years old. The average age of the women-workers on the project was forty-nine; of the men, thirty-seven. Two of our project workers became project managers and still are (1941). One became a WPA administrative employee and at present is co-ordinating personnel-record defense surveys. Nine found private employment and are still so employed. This includes work as a private secretary, an accountant, a teacher, a salesman for radio and speech apparatus, three filing clerks, two stenographers and one research worker.

Eight having reached the age of sixty-five, were dismissed from WPA service. However, two other workers in this age-group had learned to do research so competently on primary and intermediate levels of instruction, that they have continued to work on other school curriculum projects. The writer has no recent information about the several workers transferred to other projects involving quite different work. WPA co-ordinators remarked when the personnel was transferred that the members of this particular group made much less than the usual ferment created by transferred workers.

V

The Los Angeles WPA offices regarded the adjustment record of the project as superior. It gained something of a reputation for doing 'therapeutic' work and eight client-workers were sent to it for that purpose. Its turn-over, in comparison with other projects of similar size, was surprisingly low. The grade and volume of its technical production included:

1. An eighty-six page bulletin, *Speech in Education*. Eight thousand copies were printed by the California State Department of Education and distributed during the spring of 1938 (see footnote 2). This was the first bulletin dealing solely with speech that had been brought out by a state department of education and so far as the writer knows, remains the only one.*
2. Seven reports of approximately fifty pages each and dealing with (a) 'Speech Tests and Measurements'; (b) 'Speech Apparatus and Equipment'; (c) 'Communication'; (d) 'Group Verse-speaking'; (e) 'Curriculum Emphases'; (f) 'Creative Self-expression'; (g) five non-royalty radio scripts for senior high school use on the lives of 'Master Scientists'. Two hundred mimeographed copies of each of these reports were made and circulated. An additional thousand of 'Group Verse-speaking' were photo-

* The writer gratefully acknowledges the help given her in the preparation of this bulletin by Professor Elwood Murray of the University of Denver whose attention was directed to general semantics at this time.

stated, because of demand, for further distribution in conjunction with the Western Association of Teachers of Speech.

3. Two thousand pieces of other research materials, which included bibliographies, digests, reviews, summaries, etc. These formed the nucleus of the reference-reading library, operated for eight weeks at the 1936 summer session of the University of Southern California.

4. An information service by mail which served approximately four hundred inquirers for up-to-date information in the speech field.

This amount of production was *not* achieved at the expense of human adjustment but because of it. Nevertheless, general semantics was not confined merely to the adjustment of project personnel. It seemed very important to the writer in doing this pioneer speech-in-education bulletin to inculcate in it some of the formulations and methods presented in *Science and Sanity*.

It did not seem possible at that time when very few teachers and fewer educational administrators had even heard of general semantics to do a direct general semantics exposition in the bulletin. Again, one had more to apply general semantics than to talk about it. This was attempted to some degree in the manuscript.

The first draft of the speech bulletin which was sent to the publications office at Sacramento, California, came back heavily blue-pencilled. It is interesting to note that in these corrections exception was taken to the frequent use of *conditional* terms in statements such as 'It *might* be helpful,' 'Children *could* be shown,' 'It *would* appear advisable,' etc. Attention was also called to the use of such terms as *becomes*, *leads into*, *proceeds*, etc., by changing them for the most part to the word *is*. A note was appended to these revisions which read: 'You ought to know that in education a thing *is* or it *isn't*.' It was further stated in this note that conditional terms convey an impression of instability. This made it rather clear that any efforts to help teachers use their own nervous systems more adequately even when reading the text, could be carried out only in part. Considerable comment, however, has come from teachers that the printed bulletin on the whole *moved* much more than such educational literature generally does and gave a sense of aliveness. Some even went so far as to approve a considerably debated item, namely, presenting the first chapter in the direct dialogue form of a conference about speaking.

Two significant statements of Korzybski's were casually used early in the manuscript in discussing speech situations: (1) that 'the nervous system makes use of the process of abstraction by proceeding from level to level';⁶ (2) that the human being is not born with a finished nervous system. The rest of the text was ordered and developed from these premises which were apparently unrecognized, disregarded or minimized by the authorities, since the manuscript was never blue-pencilled on this score.

VI

The applications of general semantics, which were made in dealing with the project's personnel, developed from the viewpoint of life issues and human survival-values. Even four workers who were more maladjusted than the rest, because of 'alcoholism',

⁶ *Science and Sanity*, op. cit., p. 380.

incipient 'dementia praecox', incipient 'paranoia' and excessive 'emotional' instability, managed to carry on well enough to avoid dismissal for a considerable period. When they were finally dismissed from the project, it was due to their non-compliance with general WPA regulations.

While each of the client-workers presented different difficulties and different degrees of problems, the 'cases' could be generalized and approached from the standpoint of *identifications, blockages and confusions*. Space forbids more than a discussion of one example in each of these groupings, taking one 'case' from each of the three wage classifications.

THE CASE OF L.H.: Let us take as a sample of identification the case of L.H. She was an unmarried woman, sixty-two years of age, with no close family connections. Economic panic had so beset her that three conferences had to be held during the first week before she became calmed down sufficiently even to attempt any work. She had deep feelings of resentment because the small income she had received for many years had been wiped out in the financial manipulations of 1931-32. Very little sense could be gathered from her first talk which was a 'verbal boiling-over'. Many terms, however, indicative of fears, insecurity and resistance to having to go 'on relief' were noted. In the second interview some effort was made to *date* for her the various experiences she had undergone, although her indignation was so great that her efforts to relate them sometimes made her speechless. Her sense of economic injustice centered about Ex-President Hoover and his 'Republican gang'. She *identified* her anguish entirely with her financial losses and at first was too perturbed even to want to work.

Enough *indexing* of various experiences was accomplished in the third talk to propose tentatively that she start on the first practice assignments. Up until this time she had occupied herself in looking at pictures and printed materials by fits and starts. Then when she first tried to settle to work, she would leave her table every half hour or so to walk up-and-down the project's runway in order to ease her 'steaming' at social injustice. She said that if she didn't do this that she would just 'explode'.

It seemed advisable to divert this energy to more productive use. It took fully six weeks and countless ten-minute interviews to find any research that claimed her interest. Finally, she did show interest in a search for rhythmic games for children of the fourth, fifth and sixth grades to improve muscular co-ordinations for penmanship. Her 'promenades' became less frequent and in two more weeks stopped altogether. Persistent application of *indexing and dating* on the part of the director in every contact with L.H. went on. Gradually her major identification began to dissolve. She commenced taking more interest in what she was doing, and to recognize that other workers on the project also had very difficult economic problems. She also developed some 'pride' in using her educational training which was more than many of her fellow-workers had had.

When she really achieved a piece of work that could be commended, L.H. began to settle down. The fact that she was now able to maintain a regular diet probably aided in her general improvement. By the end of the third month she was working steadily and quietly. When the project opened its reference-reading library her work was a genuine contribution. At the start of the fifth month, her classification was raised from

sixty-five to eighty-five dollars a month. She left the project at the end of ten months, having saved enough money to attend the 1936 national Townsend convention in Ohio! On leaving, she stated that working on the project had both changed and helped her. Two years later she wrote requesting copies of some of the work she had done on the project and returned the loaned manuscripts promptly and courteously.

THE CASE OF F. E.: We take next as a sample of *blockages* the case of F. E. He was a married man in the late thirties and had a wife and two small children to support. He was of German birth and came to this country by way of Panama where he had soldiered. He spoke proudly of his Prussian origin and noble blood. Apparently F. E. had had a great deal of 'push'. He had gone into the newspaper business in Detroit and reported that in 1927 he paid the Federal Government thirty-two thousand dollars in income taxes. The next year he took a trip to Germany with his wife and babies to show how he had 'succeeded' in America. On his return he branched out into the real-estate business in Detroit and was loaded up with mortgages when the mists of the depression descended and wiped out every mark of his 'success'. With his remaining material assets, a car and four hundred dollars in cash, he drove his family to Southern California to start life anew. Various jobs as salesman, door-to-door canvassing, even selling newspapers failed to keep him going in Los Angeles. Need of milk for his children compelled him to accept 'relief' bitterly. He was a person of more than ordinary energy, had a quick head and sometimes a resourceful one, and showed that he was champing at the bit with frustrations of several kinds.

It soon became clear that to ask such a man to sit quietly day after day for six hours working from books or with papers, would do him or the work of the project little good. He had to be moving, on his own, getting some ray, no matter how small, of 'glory'. While polite enough to the other workers, and showing no small sense of humor in the personnel group meetings, F. E. put barriers between himself and other workers through over-assertive attitudes, frequent braggadocio, and when he could get away with it, downright domination. His business life had conditioned him to accept exploitation of other people as 'normal'. He saw no reason why he should not talk other workers into doing his work, if he could. He seemed to have to be 'pursuing' something and having sufficient clashes to derive a sense of excitement and to 'impress' people with his initiative and 'superiority'.

These characteristics not only bespoke his 'drives' and 'frustrations' and resulted in several obvious *blockages*, but they made it difficult to integrate him into the activities of the project. After various experiments in which he did no work when in a unit because he could not 'boss', or did all of the work because he regarded the other helpers as 'stupid', or advised other workers to the point of distraction, he had to be given some 'shock therapy'. This consisted of an interview in which he was 'pricked' for blocking any functioning of his actual capacities. He was assigned a sequence of problems to work out by himself that would test his planning-ability, and was given a few sidelights on some of the other workers' economic-descents that surpassed his own story.

F. E. did well enough in the above mentioned problems to warrant some words of commendation in a group meeting about the third month. This incident started the modification of his behavior and he began to work tirelessly, to bring in more and

more off-the-beaten-path research items, and to be more agreeable to his colleagues. As this change became apparent, he was selected to be the first 'technician' to attempt field work which meant interviewing the heads of various schools for information, etc. This work provided things that were useful for getting at his blockages in other ways. He was made responsible only to the director and given the warning that just as in business the slogan, 'the customer is always right', should be applied in contacting educational administrators.

Some school executives were rather 'hard nuts to crack' and this worker got plenty of opportunity to *index and date* his behavior in his conferences with the director. His greatest need was an active use of the *etcetera*, and many of his difficulties in personal contacts came from this lack. He kept at the interviewing, however, and did well, especially after getting a 'natty' suit of new clothes and accessories. Then in the eighth month a 'bomb' exploded. The director, coming from an outside conference, returned to the project about noon and found most of the workers in an uproar with F. E. the center of the contention.

It appeared that this worker had gone over the head of the co-ordinator of the typing unit by ordering one of the stenographers to put aside the work she was doing, to get out some of his material. This piqued the typists' co-ordinator and she bawled out F. E. He retaliated by making some arrogant remarks about this woman's extra-marital relations with another man-worker on the project (this woman's husband was in an insane asylum) which led evidently to a free-for-all verbal brawl in which the older women of the project lined up critically against this woman's 'romance'. The project secretary and the clerk couldn't get on with any work so they also had just entered the 'fight' when the writer arrived.

It was advisable to call for *silence* at once, suggest that every one take a lunch period of an hour instead of the customary half-hour, give the active protagonists a chance to tell their stories privately and suggest that each take the afternoon off. When the other workers returned, the director made an announcement to the group that nothing further would be said of the incident until the facts were in hand. This did not suit the man-worker whom F. E. had accused of 'looseness', and he made off promptly to the central WPA office.

The following morning brought notices that both F. E. and this woman-worker had been dismissed from the project, and also the typist involved. The WPA co-ordinator in charge of the project at that time did not grant the writer's request to consider the matter otherwise than as a case of insubordination. He seemed chiefly concerned with asking questions about F. E.'s interest in Hitler, and this may or may not have had something to do with completely severing F. E. from WPA a few weeks later when he failed to adjust to the project to which he was transferred.

THE CASE OF F. D.: Although many examples of *confusions* could be cited, the case of F. D. had some humor in it. This worker was a man of seventy and was with the project for six months, until the authorities checked on his age and retired him on a state age-pension. He was a spry and dapper little man with apparently no one to care for him. All his life he had followed the horses. He had been a jockey for some years, then a stable-worker, later a 'cheapskate tout', and now of late years he had been

pre-occupied in finding some system that would make his betting get better results! Nevertheless, F. D. was quite retiring, and he confided to the writer that he had always had an admiration for people who worked with books. He was quite happy to sit for hours copying things from books in a precise, old-fashioned hand. The difficulty was that he seemed to have no 'idea' what he was copying.

Regardless of how much he was shown what to do, he had a knack of starting summaries any place in a text that took his fancy; he would translate red markings into blue markings and vice versa with the greatest of ease; and his notion of making a synopsis remained, for weeks, just copying any phrase that appealed to him, skipping several others and then going on with another he liked. It seemed no great harm to the director that F. D. was slightly extraneous to the project's production, but he was so eager to be helpful, and furnished such an example of canalized *confusions*, that he became a special subject of human research.

It fascinated him to write 'digests' of what he considered 'psychological' books, and his quaint manner of 'synops-ing' made triple hash of whatever hash the original text contained. It seemed better not to hurt him with much of an analysis of these productions, but gradually to get him away from the notion that his individual contribution lay in this direction. Several experiments were then tried, such as having him take charge of supplies, assist with filing, and only make a 'digest' when he came across something which he considered 'must-do' material. He finally became *ordered* enough so that by the time he was taken off the project he was serving as an interested and fairly efficient mail clerk, in addition to other duties.

The morning after he had news of leaving the project he came to see the director. He told her that he had to celebrate his retirement the night before. This had taken the two dollars he needed that day to bet on a certain horse. He wondered if the director would lend him this which he would repay when he got his last WPA check. The director made him feel positively 'bouncy' by *giving* him two dollars. She never learned however whether or not this brought him 'luck'!

These three cases have been cited to show merely a range of conditions in using general semantics. Several others not cited were much more successful. All benefited to some extent from the use of general semantics. This came about not so much by their individual efforts but by sharing, under quite controlled conditions, a set-up which automatically involved practice in general semantics *d o i n g*. Human re-orderings were not sufficient, at least in the cases detailed, to assure much further progress. However, it was enough to adjust personnel in the project situation, have them enjoy the work, and in many instances learn to work with relative competence. Four workers developed an interest in general semantics which they have continued. Six others have had less specific interest yet have kept in touch with it off and on.

CONCLUSIONS

There is no question in the evaluations of the writer that each worker's *identifications*, *blockages* and *confusions* were markedly reduced by applications of general semantics—a conclusion related to a remark by one of the project's wags: 'Put a lot of maladjusted people together and what do you get?—a project.' These workers be-

came more ordered through using the orientations of general semantics as well as its methods. Direct, in-the-situation ways-of-doing had to be found and tested patiently.

This living and fruitful experimentation vitalized for the director the long hours of work and the project's manifold demands. She came to see more and more that no successful application of general semantics could be made to the project personnel or to the manuscript work in hand unless she was also learning to use her own nervous system at its best. She saw clearly how no mere 'cortical tickle' or book theory can produce integration, etc., which comes only from hour by hour living application.

In addition to the adjustment and production records of the project, a third result shows the utility and efficacy of general semantics; the project had none of the various local-regional-national operation-brawls enjoyed by many projects. Such co-ordination problems as it had were minimum in number and importance.

One conclusion that the writer would like to stress from the data presented in this paper bears on the notion that for groups of 'ordinary' people, *use of general semantics is more beneficial than premature contact with it 'intellectually'*. This conclusion focusses a final point. It makes a review of what general semantics did even on a small scale for this group of WPA clients seem particularly pertinent *now*. We are facing in America, as never before, the results of confused uses of our human nervous systems. We also face a challenge and an imperative need to use these nervous systems properly if we want to survive at *human* levels. The 'panics', 'fears', 'emotional' shocks and economic disasters found in the group discussed are appearing—and will continue to appear with greater impacts of changing conditions—in larger and larger numbers, and not only in the 'relief corps'.

In the light of her project experience, and of several other experiences since then in using general semantics, the writer urges *that everything that is possible be done, and promptly, to have in this country an indefinite number of mass applications of general semantics set in operation.*

DISPELLING 'EMOTIONAL CRISES' THROUGH EXTENSIONALIZATION*

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There are few definite statements about all clients which a psychotherapist can make with any assurance. Perhaps there is but one such. At any rate, it is certain that no individual has ever reacted in full to the operative situation in which his 'problem' emerged. Rather, he has reacted to a self-created inferential 'situation' made up of certain elements abstracted from the actual situation as lived. Furthermore, in most instances, seeing only his 'self-created situation', he has reacted to it as if it were commensurate with the total reality involved. Finally, it is highly probable that he has remained unaware both of abstracting only a portion of the operative environment and of identifying his 'self-created situation' with the full operative situation.

Behavior based upon these two unconscious processes accounts for an incalculable number of cases of maladjustment, some of which are critically serious. Since the client, unconscious of abstracting and identifying, has acted in 'good faith', he is likely to be violently disturbed by the consequences. Typically, he projects the blame on his associates and shows himself to be 'grievously disappointed', 'unforgivably betrayed', or 'tempestuously outdone'. Shaken or blocked, enraged or tortured as he may be, it requires highly skillful management to arouse his awareness of what he himself has done sufficiently to free him of his illusions. He must not be put into a position where he brings on complications because he feels he has to use some self-protective device to 'save his face', or to resist pressure toward what to him seems a self-betraying reversal of policy, or to seek in panic for some one to ease his shattered self-trust.

General semantics provides the principle of *extensionalization* which lends itself to the development of techniques powerful enough, yet flexible enough, to meet these requirements of adjustment. Extensionalization can operate both to dispel and to prevent 'emotional crises'. During overt incipient stages, extensionalization can reveal the abstracted and false-to-fact nature of the client's inferences. On the other hand, extensionalization may become ingrained as a habit or type of reaction. When this occurs, it is an effective means of preventing the forming of the false inferences which are frequently the origins of his disruptive 'emotional' distraction. Two cases will be presented to exemplify the value of extensionalization in dispelling 'emotional crises'.

Before presenting these cases, however, I wish to distinguish between two levels of treatment at which extensionalization can take place and to point out the corresponding differences in techniques. At both of these levels, the self-created 'situation' of the individual is so limiting as to produce the maladjustments. At the first level, however, his 'personality' presents no considerable resistance to extensionalization. In common parlance, we might say that his point of view is partial and hence distorted by lack

* The term *extensionalization* represents the key principle in the methodology of general semantics as presented by Alfred Korzybski in his seminars and in *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

of adequate orientation, yet his basic attitudes are sound and open to re-education. At the deeper level, on the other hand, the demands of certain deeply rooted attitudes or other predispositions not only seriously malform the self-created 'situation' but also result in organized resistance to any form of extensionalization. In this latter case, not only is his point of view limited and malformed, but the basic attitudes involved are prejudiced, illusionary and based on false-to-fact assumptions. They are markedly ego-centric and ego-protective in terms of the requirements of the developed self-estimate of the client.

In treating cases at the first level, the approach can be relatively direct, consisting of two aspects: (1) arousing the client's awareness of having abstracted and identified; (2) getting him to take into account ignored but significant data.

In treating cases at the deeper level, the approach must be indirect. Two aspects must be added to those involved at the first level of treatment, one at the beginning, the other at the end. First the therapist must guide the client through a period of experimental, firsthand exploration, so planned as to yield disturbing experiences of contrast between the 'self-created situation' of the client and the operative situation in which he is participating. The degree of rigidity marking the personality-organization of the client will be a determining factor in deciding how disturbing these experiences must be made. The experiences may be imaginary or substantial, but they must be sufficiently vivid to be convincing. The purpose of this preparatory step is that of cracking the rigidity of the client's patterns of reaction, and so rendering him subject to re-education. Following this stage of treatment, or quite frequently merging with it, there are introduced aspects one and two described for the first level; i.e. the arousing of awareness of abstracting and of identifying in this specific situation, and the acquiring of previously ignored but significant facts. There then remains the last aspect; the gradual assimilation of the experience and the re-organization of the 'personality' on the basis of more *highly conditional* responses in place of the previous rigidity.

The accounts of the two cases illustrating treatment at these two levels of *extensionalization* must be much abridged, omitting discussion of all aspects except those pertinent to the subject of this paper. Needless to say, it was necessary to direct treatment at other aspects also.

EXTENSIONALIZATION AT THE FIRST LEVEL

Mr. Arthur Brooks and his eight-year-old son, Donald, are the important persons in this case of first-level treatment, the easier case of the two to be presented. The basic attitudes indicated no considerable resistance to *extensionalization*. Mr. Brooks came to his first consultation, pale and tense. His opening statement concerning his problem ran like this: 'I've had a shock so terrible that I cannot take it in my stride. I thought my little son loved me deeply, but he just plain exploited me. He sold out our relationship and smiled while he did it.' Encouraged to describe what had happened, Mr. Brooks proceeded:

We have just one child, this boy, Donald. He is the greatest thing in our world. We love him with all we've got. He and I have been regular pals in almost everything. I've tried to train him to like to play fair and never use any ad-

vantage he may have to put somebody else at a serious disadvantage. Well, the other evening I was standing on our corner talking to two neighbors. Donald knows that these men are my best friends and that their friendship means a lot to me. But what did he do but come up to me right in the middle of our three-some and touch me for a quarter to buy some ice cream cones for the boys he was playing with. If he had asked me for the money when we were alone, it would have been all right, but he put me on the spot by doing his asking in front of those men when he knew I couldn't do anything but give him the money without asking a question or saying a word. He put me at a disadvantage and then he took advantage of me to get what he wanted. I thought he loved me too much to play me such a dirty trick.

During Mr. Brooks' grieved and pained accusation of Donald, several inferences could be made. Investigation proved them correct. Donald had no access to money except through begging for every coin he ever received from his father. The latter got great satisfaction out of his advantages as holder of the moneybag and as judge of the 'justice and injustice' of Donald's requests, not only on the basis of the worthiness or unworthiness of Donald's objects of desire but, more crucial by far, the degree of Donald's 'goodness' of conduct in terms of parental standards. At one point in the interview Mr. Brooks said, 'Donald knows better than to come to ask for money when he has been up to something which his mother and I disapprove of. So whenever he does come asking for it, we're sure that he's behaving as he should. At least we've been satisfied that this was so until this trick of his.' Further exploration revealed the fact that Mr. Brooks enjoyed immensely each act of giving things to the child, enjoyed being his benefactor. As a rule, he was very generous to Donald, too, but Donald usually was made conscious in some way that it was from his 'loving father' that the flow of good things came.

Fortunately for Donald and the unity of the family, the father's misplaced satisfactions were not requirements for his own happiness. Indeed, it had never occurred to Mr. Brooks that he frequently put his son 'on the spot' and took advantage of him, because the child could ask for nothing unless he had followed closely the arbitrary patterns of conduct set up by his parents. Psycho-logically speaking, Donald was a slave, forced to live under the 'will' of another in order to secure the satisfaction of practically all of his wants. Notwithstanding his limited viewpoint, the father loved the child far more than he enjoyed the satisfaction derived from his domineering. Furthermore, these satisfactions, however unhealthy, were based upon the sound attitude—that of wanting to be a 'real' father to his son to the fullest extent possible. Indeed, he had never clearly evaluated his own acts. He had never realized that he himself had been using his advantage as an adult-sized, monied person in authority to put his small, dependent son at a disadvantage so great that the son frequently had to concur 'without asking a question or saying a word'. If the problem had not been treated in time, it might not have been long before Donald would have voiced exactly the same complaints against his father as the father was now making against his son. In the meantime, the child had shown above-average intelligence in figuring out what seemed to him a much more painless fashion of extracting money from his father.

Expressing this according to general semantics, we would say that Mr. Brooks had abstracted from the problem-situation only those factors which had 'meaning' for him in terms of the values to which he was sensitive at the time. Then he had identified his limited generalizations with the total operative environment. Inevitably,

having gone this far, he interpreted the behavior of Donald, not as a possible consequence of his own limited evaluations, but as a grave act of intentional disloyalty. His evaluation had been inadequate, for it was based upon incomplete and misinterpreted data. Nevertheless, his basic attitude toward Donald was that of preferring to use his power and authority to further the child's welfare rather than his own individual delight in playing the rôle of judge and benefactor. Consequently, the treatment could be direct.

Treatment began with guided questions and suggestions which led the father to see the crucial incident through the eyes, first of his son, and then of two other parents (presented through case studies) who, like himself, had acted upon a too limited point of view in similar situations. This portion of the treatment (1) aroused in him a consciousness that he had abstracted and then had identified his self-created 'situation' with the actual one. The second part of the treatment, (2) that of 'the acquiring of previously ignored but significant data', had already begun, of necessity, during the first part of the treatment because Mr. Brooks, by looking through his son's eyes, had extensionalized his inferences about his son and their relationship. Now he was ready to continue with re-education in the field of the principles and practices pertaining to children's allowances, or 'sharings' as I prefer to call them.

After extensionalization, Mr. Brooks' strongest reactions appeared to be enormous relief over the discovery that his son had not been 'disloyal' and intelligent eagerness to develop more sound and effective evaluations as a father. He made no effort to explain or excuse himself nor to resist the implications of the insights gained in our evaluative interviews. Follow-up on the case supported the working assumption that he welcomed *extensionalization*.

EXTENSIONALIZATION AT THE DEEPER LEVEL

Mrs. Wagner came for help, ostensibly in the interest of her ten-year-old son. The family physician had warned her of the danger of tuberculosis if the child's undernourished, overtense condition did not improve. But she herself was both undernourished and overtense, as was the other of her two children, a girl of twelve. The geographical location, the housing of the family, and the size of the income provided no grounds for these conditions. Mrs. Wagner wanted a formula for relieving nervous tension but presented strong and skillful resistance to my exploration into the more intimate aspects of the family situation. It turned out later that she had been terrified, and this with sufficient reason, over what her husband would do if he knew that she had reported the family situation as she saw it to a psychotherapist. But finally one day she burst into a violent spell of weeping and cried out, 'Oh, I simply can't stand one more flop. If he throws a flop once more, I'll do something terrible. I'm afraid of what I'll do.'

In brief, this was the situation. Her husband 'threw a flop', as she had come to designate it, whenever things did not coincide precisely with his wants and orders. 'A flop' consisted of becoming visibly pale and paler, seeming to grow weak, first in the knees so that he 'flopped' down wherever he happened to be, and then became limp all over. He quickly became more and more ill until it was necessary to go to bed. He required an excessive amount of service while in bed, for he appeared to be pitifully weakened in every respect except for a markedly strengthened sexual appetite and

expression. He remained in bed for periods extending from a few hours to two weeks, depending upon the degree to which he felt his preferences, wishes or orders had been frustrated, but usually about a week. In his particular line of work, he surpassed all other employees and so his employers bore with his absences, in fact, sympathized with him because of his illnesses. But one illuminating aspect of these 'flops' appeared in the fact that all loss in pay, for the periods he was in bed, was taken from the amount allowed his wife for family expenses and her personal needs.

His history showed that his German father had been a ruggedly individualistic dictator and his German mother had paid slavish obeisance to her men-folks. Young Mr. Wagner, his mother's favorite, had been considered so delicate during his adolescence that his mother had been anxious for fear that she lose him. So she spent most of her mothering upon him, surreptitiously securing for him whatever he demanded and protecting him from the taunts and attacks of the father who was ashamed of a 'weakling' son. She lavished her love upon her son; he was at once her jewel-of-great-price and her star-of-promise. The mother had told young Mrs. Wagner what a remarkable person she was marrying and warned her that she would lose her husband if she did not understand his delicate, incomparable nature and ways. The young Mrs. Wagner had been an overtimid, underprivileged child, at the time of her marriage. She had wanted to escape from her own home and was flattered by being in demand in so many ways by her fiancé. Young Mr. Wagner's 'flops' had begun soon after their marriage. He, himself, was unaware that his 'spells' were devices by which he forced his wife to treat him as his mother had done. Indeed, he had undergone two major operations for the 'removal' of the 'flops', insisting that he was sure that they were caused by some digestive difficulty.

Treatment began by sending Mrs. Wagner and their frail son away for six months. Other aspects of the case, combined with those here presented, made this highly advisable. The father and daughter were left to run the home. It was understood that Mr. Wagner would start a series of consultations with me on this matter of his 'flops', a mark of distinction of which he was in some ways proud. It increased his importance.

The case was a relatively extended one and cannot be recounted in detail. The first step was the longest and hardest—that of guiding Mr. Wagner through a period of experimental, firsthand exploration, so planned as to yield disturbing experiences of contrast between his 'self-created situation' and the actual operative situation. Here are some of the simpler among the arrangements which were made through which he could have the needed disturbing experiences of contrast: running the home and being responsible for his daughter largely by himself; receiving from the people with whom his wife and son were staying detailed, glowingly appreciative letters concerning them (letters which took for granted his joy in the happy news); inclusion by invitation in the family circles and activities of some young couples of the same age and interests so that he could get the 'feel' of *their* family relationships. Frequent, regular consultations continued.

At first, he was overjoyed and immensely grateful that my treatment had caused the sudden, almost 'miraculous' cessation of his 'flops'. This soon turned into a different feeling as the arranged experiences of contrast forced him to discover more and more the limited nature of his 'self-created situation'. He began to see that it was

the uselessness of having 'flops' during the absence of his wife and not any 'miraculous' treatment which was responsible for their cessation. His awareness of the nature and instrumentality of his 'flops' increased until he reached the point where he could not escape the disruptive realization of their 'meaning'. His momentary anger and shock were violent, for his condition was deep-seated, almost lifelong. His mother had always allowed him to have his way and had done nothing to widen the limits of his private world. His wife had aided and abetted him in sustaining this private world without realizing what was going on until the difference between *his* world and the 'real world' was too marked for her to endure. Now to have the limits of his self-fabricated world break down and become extended more in keeping with the 'facts' was exceedingly painful for Mr. Wagner. In spite of this, he did not resist, for he had been brought to face incontrovertible facts, not a therapist's opinion. If this initial step had been taken through verbal interviews only, I doubt if it could have been successful in his case. The validity of the insights and facts which had emerged during the series of substantial experiences into which he had been guided could not be gainsaid. The rigidity of his personality-patterns had been broken. He was now ready for the second and third aspects of treatment, given along the lines described in the previous case, but adapted to his situation.

To these three aspects had to be added the fourth one—the gradual assimilation of the experiences he had been through and the re-organization of the personality upon the basis of more *conditional* responses in place of the previous *conditioned* rigidity. This involved co-operative evaluation not only between Mr. Wagner and the therapist but also between him and the other three members of his family when they were again together. It resulted in a co-operative working out of certain guiding programs and arrangements which tended to prevent slipping back into the old ways until Mr. Wagner had had sufficiently convincing experiences of the satisfactions to be derived from living in an extensionalized world. Since he was a man of above-average abilities, this conviction did come and with a strength equal to that of the rigidity by which he had previously resisted any extending of the boundaries of his 'self-created situation'.

One marked evidence of the depth to which the extensionalizing treatment had permeated came in the form of his confiding a frank, honest report of his case and its outcome to a fellow worker. The latter had known of Mr. Wagner's 'flops' and he had seen a great change come over him. This man was himself suffering from a threat of continuous frustration similar to that to which Mr. Wagner had spectacularly but abnormally accommodated himself. In this report Mr. Wagner did not spare nor defend himself. Furthermore he expressed profound appreciation for the rescue from his illusionary abstractions of the world. He has thrown no 'flop' since the close of the treatment according to his own and to his wife's reports. As a matter of fact, he is intrigued to sound out further possibilities of extensionalization as a foundational process in his adjustments and relations with others.

It is important to emphasize the 'objective' nature of psychotherapeutic treatment through extensionalization. The psychotherapist does not focus upon a direct solving of the 'problem' of the client; rather the efforts are to provide conditions whereby he will become aware of abstracting and identifying, and then explore for and test previously ignored but significant data. It is his direct experience of the 'new' views and of 'new' data which do the work. Consequently there is no considerable resistance or

resentment toward the therapist to be dealt with. The therapist has expressed no opinions or diagnosis. Furthermore, once this process of *extensionalization* is thoroughly experienced in one situation by the client, it tends to become a consciously-sought method of response and evaluation. The satisfactions resulting from improved adjustments provide determinative motivation.

GENERAL SEMANTICS IN THE PRACTICE OF A CONSULTING PSYCHOLOGIST

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It is not my function, I feel, to repeat general formulations of neuro-semantics. Rather, I would like to answer the queries of a certain number of professional people interested in applying techniques of general semantics. These people usually say, 'I understand these formulations, but *how* would I apply them in a particular case?' It is this 'how' or methods that I would like to talk about.

The group of people with whom I have found that general semantics techniques work the most rapidly and efficiently and with whom I have been able to rely on general semantics exclusively in therapy, are the people with frank, open conflicts. For instance, the kind of person who comes in and says, '*Such and such* is bothering me. What am I going to do about it?' With such people I have, of course, used most of the principles and techniques described by Alfred Korzybski in *Science and Sanity*, relying especially on training in consciousness of abstracting and use of the extensional devices. I believe that this should be done in its entirety whenever there is time. Unfortunately, in life there is generally not time, and I have developed some of the following ways of using the techniques whenever a rapid extensionalization is needed.

A number of people come in with a problem involving a specific 'hurt' and with few other general personality complications.

Case J. A. reported that he was happily married, had a good job, and enjoyed his social life. In fact, everything in his present situation was very fine, but he worried about his wife's 'past'. His wife's 'past' boiled down to the fact that she had had sexual relations with another man in 1929, several years before he had married her. I asked him to write out how he felt about this. Here is the crux of what he had to say:

To me a girl who has committed an immoral sex act is incredibly foul and unclean. It is a thing once done that can never be atoned for. There are no reasons to justify it and no punishment adequate. She should be stamped out as one would a horribly repulsive snake. . . . There is this leprous sore on her body which no amount of pretending will eradicate.

Because of circumstances, this man was able to see me only two hours a week for four weeks. I spent the opening two hours in explaining to him levels of abstraction and in showing him how to write and talk in lower, more differentiating levels of verbal abstraction. As soon as it was evident that he knew the difference between high inferential levels of abstraction and more differentiated levels, I put him to work on his own problems, re-writing his 'thalamic' outburst about his wife's 'past' in extensional terms of what had actually happened. The strong language which I read you above simmered down to 'organism X in 1929 had sexual relations with organism Y'. With the formulation of the problem in these terms, his 'feelings' were greatly altered, his whole evaluation was changed, and at the end of eight hours, he felt there was no

longer any 'hurt' existent. I have seen him ten months later, and he reports no recurrence of the problem.

Case C. S. could not seem to understand general semantics formulations and exhibited a condition which would ordinarily be labelled *dumbness*. I was trying to help her with a severe depression. I asked her to write down for me what she was saying to herself when she got up in the morning feeling depressed. Here is some of what she wrote:

I am so damned fat I can't move, I feel like a stuffed toad, and look worse. My house is positively filthy and I can't stand it. I have to go to that crazy party tomorrow and I haven't a decent thing to put on. My hair and nails need doing. My car is about to fall apart. I doubt if I can make it. Barbara phoned and said her heart is broken.

I was able to show her what is involved in extensionalizing problems on lower levels of verbal abstraction. Here is how she re-wrote the above after this demonstration:

I weigh one hundred and fifty-five pounds and am five feet three inches. The house is dirty. Tomorrow I am going to a party. My hair and nails need doing. My car needs washing and the tires checked. Holly didn't propose to Barbara.

She reported 'feeling' improved after this re-formulation, and after steady practice in doing this sort of thing, her depression cleared up.

It can be easily seen that the above technique involved the application of very elementary ABC knowledge of general semantics. It involves translating fluid, uncritical, verbalizing into writing—a static medium—and so involving the visual and kinaesthetic senses and putting inner speech into a form where assumptions, inferences, etc., can be verified, and then altering these assumptions and inferences by reducing the levels of abstraction.

Now I am reporting these cases because I presume that at this Congress a very large number of us are interested in general preventive educational procedures and a very small number of us would be interested in deep, complicated cases. A great amount of work in preventing countless maladjustments, verbally produced illnesses, etc., could be accomplished by use of the above described extensional procedure and this could be done by teachers, scout leaders, parents, educational counselors, etc. The only qualification I would make for this is that the case be chosen wisely. The case must not have an anxiety neurosis, be psychotic, be 'dead thalamically', or be acutely over-verbalized. To use Horney's terminology,¹ he must have a 'situation neurosis' and not a 'character neurosis'.

Another variation of this simple procedure consists in showing the patient how we build up conclusions, generalizations, etc., from first order observations and in making him conscious of the differences between high order inferences, conclusions, generalizations, etc., and first order facts. Then we apply this technique to some obviously faulty generalization of the patient.

Case D. E. said, 'People don't like to hear me stutter.' When we broke this down to the underlying observations, it was discovered that an individual, John Smith, had said that it made him feel a little ill at ease to hear D. E. stutter. Upon changing

¹ Karen Horney, *The Neurotic Personality of Our Time* (New York: Norton and Co., Inc., 1937).

his generalization to fit first order observations, he underwent favorable change in his general orientation toward his speech problem.

Case C. F. stated with some finality that girls would not go out with a stutterer. Again, he was asked for first order observations. Would he please list the girls he had been out with; make a written report on the question of whether other stutterers at his school dated girls or not; and would he also write up results of a telephone survey to be conducted by him to determine whether certain specific females would date him. Needless to say, when these observations were tabulated, he was forced to change his generalization to a more valid and hopeful one.

I generally tell people who appear to be making a large number of questionable inferences, such as the above mentioned cases, to write down the generalization or inference that is giving them trouble. The sheer looking at it quite often causes them embarrassment, etc. They decide to give it up, but with most of them, we have to go further. I tell them to draw a line under the inference, make a heading, 'Supporting Observations', and then construct a list. The experience, of seeing on paper inferences directly contradicted in most cases by observations, is very beneficial and, of course, introduces the correct order of abstracting. This procedure has great applicability in light cases of inferiority feelings, for instance, those we see in great numbers in college populations. Generally you will find at the bottom of the inferiority complex, some such improperly abstracted inference as 'People don't like me,' 'I am socially inferior,' etc. And if the case is not too deep, the above procedure carried out on many inferences over a period of time will induce a complete re-evaluation.

Another good extensional procedure is to have the case write his autobiography. This in itself gives insight and furnishes a certain degree of extensionalization. Further extensionalization will be gained by getting the patient to read this autobiography to you. Favorable therapeutic factors here are oral reading with consequent hearing by the patient of his own verbalizations and so evaluations and the situation of having to verbalize them in the presence of a second person. In going over this autobiography, certain 'hurts', 'shocks', etc., will be uncovered. The patient in many instances will cry, become tense, get shaky-voiced, etc. You are probably then dealing with a 'hurt' or 'shock' which is still persisting in the nervous system in some repressed form. I have people write about these 'hurts', sprinkling their writing with dates and indexes and substituting terms with no 'thalamie' associations such as 'organism X' for the names of parents, siblings, etc. I have them do this until they can talk to me and themselves with no noticeable 'thalamie' upset.

Case G. F. was a manager of a shop which was getting an increasingly educated clientele. This was upsetting because she has a great dislike for 'education'. This turned out to have originated in the year 1909. In that year, she was attending grammar school and liking it very much. Her mother made fun of her for wanting to go to school. There were two particular occasions she remembered very bitterly. Once she had made some drawings at school which were on exhibition. Her mother made fun of them and refused to come to school to see them as the parents of the other children did. On another occasion she was chosen to take part in the school play. Her mother refused to come to see this. G. F. told of these experiences with great affective disturbance; tears, anger, etc. She was instructed to write about them at length using dates, indexes,

and differentiating language. When she came in after doing this, she said she did not feel different and so I asked her to read to me what she had written. She had peppered her writing with dates so that it went something like this: Ethel¹⁹⁰⁹, father¹⁹⁰⁹, mother¹⁹⁰⁹, school¹⁹⁰⁹, etc. When she finished reading this to me, she said, 'Now I know what we are trying to get at. I feel like that was a different person to whom all these things happened.'

Generally speaking, most cases can be considered over-verbalized, but relatively, there are certain cases with whom you get the impression that an *acute* over-verbalization constitutes the major symptom. These people talk extremely rapidly, frequently, and for a long time. They are quick, undelayed, and generally 'know all' about 'everything'. In many cases they may have an organic symptom which has been diagnosed as 'psychogenic' by a physician and which they have acquired by reacting to an 'idea' instead of sense data. With such cases I immediately begin to talk about consciousness of abstracting and the correct order of abstracting, and I generally hand them some object on the desk such as an ash tray or letter opener and show them how to investigate it silently, telling them to put it down as soon as they start to form words. In the beginning they will not be able to achieve this at all, or only for a few seconds, and will insist that you cannot investigate without using words; but with steady persistence, the length of time during which they can investigate silently increases and a remarkable change takes place in their semantic reactions. They become quieter, speak less and with frequent qualifications, etc. The writing techniques that I have described above will not work at all with these cases because their problem is over-verbalization, and you must begin below verbalization or their nervous processes will distort what they are doing.

Case B. R. knew too much about herself for her own good. She 'knew' she did not need therapy, that one or two lectures and a cursory reading of Johnson's monograph² had given her all the information there was to have about general semantics. She would drop in for her conferences a month or two apart and spend her time trying to convince me that there was really nothing wrong with her, asking for techniques that would clear her up in a few weeks. During some of these conferences, I told her that she was over-verbal and that she would have to learn to 'shut up'. I did not get an opportunity to go into this mechanism very deeply with her, so she simply repressed and then, when she did talk again she was worse than ever. Finally, one day I handed her an inkstand to investigate silently. This enraged her. She said, 'If I did not know you well, I would leave the office now.' But she made an effort to investigate the inkstand. When she tried to investigate, she was still verbalizing inside and her lips moved. I finally got her to the point of investigating for a few seconds without forming words, and this was the turning point in her case. She went home and spent the whole week-end becoming acquainted with her home surroundings on the silent level. On Monday she returned, ready and willing for a long psychotherapy, and from that day on she improved markedly. She became really quiet inside, more delayed in her reactions, less tense, less resistant to analysis of her basic patterns of evaluation.

² Wendell Johnson, *Language and Speech Hygiene: An Application of General Semantics*, General Semantics Monographs, No. 1 (Chicago: Institute of General Semantics, 1939).

I want to report a shift that has occurred in 1941 in the kinds of difficulties I see in my work. I do not know whether this shift is due to local or personal factors alone, or whether it is a reflection of the world situation. The facts are that in 1940 'anxiety' cases comprised about eight or ten percent of my total case load; whereas in 1941, more particularly at the present time (July), anxiety neuroses make up ninety-five percent of my total case load. For a full, beautifully detailed picture of this type of disturbance read Karen Horney's *The Neurotic Personality of Our Time*. In brief, such people manifest a diffuse, floating, generalized type of anxiety. They have symptoms which apparently have nothing to do with any previous negative conditioning. They are totally unaware of their underlying conflicts and may maintain that they have had a healthy and 'normal' life. But, like one of my cases, they may tremble when they pick up a Coca-Cola glass; or like another, they may go back five times to shut the gas off; or like another, they may tremble in traffic, although they have been driving well for thirty years previously.

I divide these people's therapy into two stages. In the first stage, lasting for about a month, I use a very active form of analysis utilizing autobiographical data, free association, results of the Rorschach test, to help make the case aware of his underlying conflicts. I am still working on methods of speeding up this period, and I shall not report on this stage of therapy because I am still formulating my views as to treatment. However, in trying to reconcile the gap between people's unconscious motivations and their conscious verbalizing, I have found Korzybski's cortico-thalamic formulations to be of immense value. As soon as the individual is actively aware of his basic conflicts, I introduce general semantics formulations with extensional techniques, and then the patient begins to show great progress. At the end of the first stage he is generally upset, tense, greatly disturbed by his self-revelation. I often get from psychoanalysts people who are in such a phase. They have gained excellent insight, they know a tremendous amount about themselves, but they do not know what to do about it. Their answer at this stage is, 'So what?' General semantics I have found offers the answer to the 'so what'.

The following is a summary of the results of my application of general semantics techniques during 1940. They hold essentially for 1941, with the exception I have made above for the anxiety cases.

In the first place, the use of general semantics in therapy, since the remedial techniques are built on a knowledge of invariant relations in the activity of the human nervous system, must apply to wide combinations of neuro-linguistic and neuro-semantic patternings. During 1940 I have found general semantics techniques highly workable when they were applied to cases involving the following problems: homosexuality, mild manic-depressive psychosis, 'simple' schizophrenia, severe migraine headache, alcoholism, impotency, frigidity, severe anxiety neurosis, insomnia, mild depression, extreme infantilism, stuttering, parental involvement, marital conflict, severe phobia, and cases involving extremely undelayed mechanisms.

Secondly, it has been my experience that the use of general semantics techniques cuts down the duration of therapy to one-half or one-fourth the usual time. I can hardly believe my own statistics on the length of treatment. They show the median number of hours in 1940 was eighteen. This tallies with the experience of other

clinicians who apply general semantics procedures. It must be realized that in many cases the patient abandoned his therapy prematurely with a spurious sense of recovery, and, as pointed out above, there are a small percentage of cases that do not respond rapidly to any therapy. However, it must also be observed that many significant alterations in patients' behavior were effected in a very short time. Here is one example, out of many, whose major complaint was cleared up in an unbelievably (by old psychotherapeutic standards) short time. A thirty-three year old academic scientist, homosexual for twenty years, was treated for three weeks. He was seen twice a day for two hours each conference. At the end of the three week period he reported no erotic interest in men and a 'normal' sexual orientation towards women. Within a month after the close of the therapy, he married. Ten months later he reports his marriage happy in every respect, no regressions to homosexual interest, and adequate heterosexual functioning. Summarizing the results of the treatment of fifty cases seen for a period of ten hours or more during the past year, I have only three cases to report in which general semantics was not useful. In three other cases the benefits seemed extremely small. In other words, the use of general semantics produced conspicuous alterations in the behavior of eighty-eight percent of the cases.

The third advantage I have noticed in the use of general semantics techniques arises logically from the second. The possibility of rapid alteration of psychopathological disorders means that the expense of psychotherapy can be greatly reduced. Since people with poor or modest incomes comprise the majority of the population, psychotherapy has now become more accessible to a new numerically vast income group. The median income of my patients treated with general semantics techniques during 1940 was one hundred-fifty dollars a month.

The fourth advantage is that general semantics methods are highly teachable. This fact alters the rôle of the psychotherapist. He is now more like a science teacher than a father confessor.

A final advantage is its simplicity. To understand *why* we use general semantics techniques you must have a grasp of all the sciences relating to man, but many clinical disorders can be alleviated without the patients' knowing this background at all. They simply must learn in an automatic way to apply the devices. This requires little formal education. I have had little difficulty in teaching general semantics devices to housewives with sixth grade education, airplane mechanics, household servants, etc. Of the patients successfully treated during 1940, eighty percent had not had a college education. In fact, I have found college education quite often a barrier to progress because it so frequently produces an over-verbalized person who is quite incapable of applying his verbal knowledge to life.

To conclude, it may be repeated that general semantics procedures appear to be unusually effective in the treatment of a wide variety of maladjustments. Aside from this basic consideration, the main advantages of these procedures are that they are economical as to time; they are, consequently, less expensive to the patient than most other psychotherapeutic methods; the procedures are highly teachable; and they are relatively simple.

USE OF GENERAL SEMANTICS IN MARITAL COUNSELING

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One of the great formulations of general semantics is the functional definition of man as a *time-binding* class of life. Korzybski's classification emphasizes that man, because of his unique cortical development, is able to manufacture symbols outside his nervous system which survive that nervous system. Because of this ability humans have become predominantly a symbolic class of life, and their survival and adjustment are dependent upon how adequate the symbol systems are which they use, and how they evaluate or interpret them. Conversely, if people are maladjusted, we can say in a broad way that they either have inadequate symbol systems or are interpreting adequate symbols inadequately, that is, mis-evaluating.

The child starts acquiring his symbols when he is very young. Children get most of their beliefs and attitudes regarding politics, religion, vocations, and married life from their parents. For example, it was generally considered the proper thing in the Victorian era for mothers to teach their daughters that 'nice girls' were frail, dainty, dependent creatures who were easily shocked and who fainted under slight provocation. If a mother has followed such a pattern all her life and teaches her daughter the same attitudes, the daughter, if she marries a virile young man with the modern outlook, will have a difficult time adjusting to the marriage state and indeed may never do so. The son of such a mother is quite likely to acquire the European notion of a mistress-and-a-wife, or, if too attached to the mother 'emotionally', he is likely to be effeminate, maladjusted with other young men, and decidedly in the wrong role if he marries.

If the father is domineering and has a medieval evaluation of the wife as little more than a chattel, the daughter is likely to become very submissive and colorless; or again, to seek in a mate a type of man totally different from her father. The son may become too submissive or too domineering in his relations.

From the time of birth, the child is conditioned by the mother, doctors, ministers, and other mediators of what Korzybski calls the 'neuro-linguistic and neuro-semantic environments'. To some extent these mediators determine even what bacteria he shall be exposed to. The child's development is predetermined by his social status. The physico-chemical cannot be separated from the psycho-social. It is only artificial and schematic to do so. As Alexis Carrel has so well pointed out, we need to develop a unity and synthesis of sciences if we are to have a science of man, and it is the foundations for this science that general semantics attempts to provide.

In no areas of human functioning do symbols operate more potently than in the choice and treatment of a mate and in the selection of a vocation. Misinterpretation of symbols is particularly prevalent and damaging in these two fields. In dealing as a counselor with some of the many cases of marital and vocational maladjustments at

the American Institute of Family Relations, the techniques which I employ may be condensed into the simple statement that I try to find out what symbols the subject is clinging to, help him evaluate them extensionally, retain those that are adequate for his adjustment, and discard and supplant with useful symbols those which are causing trouble. In other words the procedure is to extensionalize the client's evaluations of his symbolism and so his reactions and actions. I shall devote the rest of this paper to the subject of marital counseling, giving (1) some generalizations about the areas and sources of marital maladjustments and (2) three cases taken from my experience in extensionalizing marital difficulties.

I

The 'standards', 'theologies', 'ideologies', 'backgrounds', 'social strata', etc., of the 'family', 'parents', and environment affect a person's attitudes toward and his evaluations of:

1. The Institution of Marriage. Attitudes in the present generation vary all the way from the belief that 'marriages are made in heaven' and that there is just one mate waiting somewhere on earth in a bower for the searching prince to discover, to the other extreme where marriage is considered almost unnecessary; as a mere formality; or as a device to give some social or legal status to a relationship which can be terminated with ease at any time, according to some whim or change of attitude, and entered into again elsewhere with equal nonchalance.

2. Selection of a Mate. The symbols prevalent in the selection of a mate are often based on the hypothesis that any two, belonging to the same religion or the same race, will be suitably mated; or that they should have the same temperaments, or conversely, quite opposite temperaments for best adaptation; or that they should have money; or be similarly educated or come from the same social strata, etc. Any such standard may contribute to ease in adaptation to a mate, but it is often given too much importance. The symbols are too all-inclusive; they are not fundamental to happiness in marriage.

3. Treatment of the Mate after Marriage. This is affected largely by the 'standards' and ideologies of the 'family'. If the background is European, the woman may be expected to concern herself chiefly with children, church, and cooking, if not with the work in the fields; and the man is expected to dominate the home with the 'lord and master' attitude. The other extreme of this is found in the milieu in which women have careers as well as men and contribute an equal amount of financial assistance in support of the family. Another attitude, all too prevalent in America, is that of the man who, having been badly 'spoiled', expects his wife to take most of the responsibility and to continue to mother and spoil him, and even to support him, so that the transition from the family of his youth to adult family life will not be too abrupt or harsh for the 'poor boy'.

If the mother of the girl has very 'Victorian' standards and the boy is more or less experienced and sophisticated, the shock of the first intimate relationship may be so severe that the wife gradually becomes frigid after an accumulation of fear and repulsion. If, on the other hand, the boy has been brought up very carefully and

rigidly, according to 'Victorian' standards, and the girl has had quite the opposite training and experience, he may be so timid and feel so inferior that he becomes impotent. We have successfully treated both types of cases in large numbers at the Institute of Family Relations.

If one parent has been over-severe and the other, over-indulgent, one or the other of the mates may become ineffective or irresponsible or alcoholic. Such deviations from the so-called normal are due to the impact of the symbolism of the psychosocial environment.

4. Relationships with Parents and In-Laws. If the young person has been taught that he owes everything to his parents, that they have 'sacrificed' immeasurably for him, and that he will never be able to halfway repay the debt, he will likely think that he should attempt, as long as the parents live, to 'make it up' to them. This type will not be sufficiently 'weaned' to make a successful spouse. He or she will be running back to the parents for advice and counseling, much to the irritation and humiliation of the mate. Such evaluations cause jealousies, resentments, and conflict. In this division there are many variations which cause upsets in married life, such as the following cases:

Case One: One young couple decided to build a house. The husband consulted the wife very little, feeling that she knew nothing about building, but consulted his father at great length on designs and plans. The two men regarded any 'idea' the wife advanced as highly 'impractical'. So, she didn't get certain closets and cupboards and a window over the sink that made the difference to her between enjoying her new home and hating it. The husband, however, did get a complete workshop in the garage which he wanted. That was 'practical'.

Case Two: A young wife always hurt her husband's feelings by referring to her parents' house as 'my home' instead of their own newly established home, and discussed with him very casually the needed rugs, draperies, and furnishings for their own living room. The husband timidly expressed his tentative preference for blue as a predominating color. She talked it over with her mother, and the two women went shopping and decided upon yellow, which they bought.

In each of these cases the chief point of grievance was not so much the thing done, as the *attitude* of the mate who felt that the parents' opinion, etc., was more important than that of the spouse. The spouse, whether male or female, wants to be considered first and consulted first in his own home. Mis-evaluations of the proper relations with parents and in-laws and misplaced loyalties cause many a marital conflict.

5. The Rearing of Children. Common conflicting symbols in this group are frequently the mother's desire to make her boy a little 'gentleman', while the father, who may have been inadequate as an athlete, may have as his own 'sine-qua-non' the determination that the boy become a good boxer. On the other hand, the mother may feel that the girl should have social training and experience which the father may consider 'all nonsense'. He believes the girl should take bookkeeping or something 'practical'.

6. Social Relationships, Amusements, Handling of Finances. In these respects,

too, the symbols may be quite different for each spouse, and if these symbols are operating to produce maladjustment, we have to change them or effect a compromise.

In regard to social relationships and amusements: The woman may prefer symphonies, or dancing, while the man prefers bowling or prize fights. Or, he may work in industry and they begin marriage in a small apartment. He makes his own breakfast and leaves early; he works hard all day, possibly in contact with many people; he comes home with the desire to eat, read the paper, and go to bed early. She, on the other hand, gets up late, tidies up the small apartment, manicures her nails, fixes her hair, and works on a new dress. When he comes home, she is rested, bright-eyed, and ready to 'go places and do things.' Or perhaps the opposite situation may prevail: the man is full of energy and always wanting to dance, bowl, or to play cards with neighbors, and the wife, taking care of a child or two all day and doing the family washing, is too tired to go anywhere.

In the matter of finances: The man may be thrifty, saving for house payments, insurance payments, or car payments, etc., while the wife cannot resist the salesman at the door, or the 'dollar day' bargains. Or, on the other hand, she may want to save in order 'to get some place' or for the education of the children and to give them 'advantages', and he may be the one who is still infantile, who lends money to ne'er-do-well buddies, buys gadgets, etc.

II

The following are a few detailed case histories illustrating how misinterpreted symbols or conflicting symbols have adversely affected marital relationships, and how extensional techniques derived from general semantics have been used in counseling.

THE Z CASE

This was a young couple in their early thirties, above the average financially, socially and educationally. Mr. Z, highly intelligent, well set-up and handsome, and Mrs. Z, attractive, athletic and aristocratic, had been married ten years. The marriage seemed to have 'gone stale'. He had decided that he was in love with his secretary, a clever, mediocre girl with a business-school education. She had come from a farm family in the Dakotas with a Scandinavian background, and had been strictly brought up in the Lutheran religion. She was socially and financially ambitious. The situation was highly colored with 'emotion' on both Mr. and Mrs. Z's part when they came in to us, and they were considering divorce. I worked with Mr. Z at first. After getting the case history and after he had filled out an 'emotional history' questionnaire,¹ I explained some of the principles of general semantics.

Whether there is actually a physiological congestion or not when there is a 'short circuit' in the thalamic region I do not know.² At any rate, I convinced him that if he wanted to relieve the 'emotional' congestion in the thalamic region, he might do so by delaying his reactions, i.e. by making his impulses travel the longer circuit through the 'cortex'.

¹ See Donald McLean, 'Emotional History Questionnaire' (Obtainable from the author).

² See, Donald McLean, *ABC of General Semantics* (Los Angeles: published by the author, 1940), Charts.

This is how Mr. Z relieved the 'emotional' congestion in his thalamic region. I had him take much time and write out a list of his resentments, irritations, etc., regarding Mrs. Z. I labelled this catalogue 'Mr. Z's gripes' and it read as follows:

MR. Z'S GRIPES

She lacks gaiety. Is not jolly. Is not vivacious. Is not at ease. Is not calm. Is not poised. Is not deliberate in thought, speed, and actions.

She has no genuine enthusiasm for my problems, moods, interests; nor desire to help me with them; to relieve pressure or take part of the load. Lacks a cheerful attitude. Is not gracious. Is not self-confident nor able to rise to the occasion. Is not entertaining.

She is selfish. She puts her interests—those outside the home—her friends, her dog and cat—ahead of mine, instead of paying attention to *me* and making a home that I will enjoy. She is not genuine—too much for effect; she hasn't any sense of the small, practical things that go to make a home complete and livable. She is not competent as a housekeeper, manager, or homemaker. She does not plan her work efficiently, smoothly, without noise and confusion.

She does not know how to spend money and get full value, either for purchases of materials or services. She is too lenient and considerate with servants; she mixes up friendly and employee relationships; she is afraid to hurt people's feelings.

She does not pay bills promptly, but doesn't like me to inquire or take an interest in her bills, etc.

She does not give me the feeling that she thinks I'm wonderful; does not show me that she is really proud of me, or admire my success or good points. She does not create in me a desire to be tender, sweet, affectionate—to think of her or to do things for her, etc. She lacks *real* appreciation for me and my work and the things that my position and salary, etc., afford her. She seems to feel underneath that she has been largely responsible for my success.

She spends too much time reading detective stories, magazines, trash—time that should be used in keeping and *making a home*, figuring out surprises, entertainment, etc., for me. She is not a good hostess. She is bossy and too executive and has no tact, or diplomacy, or cleverness. (*All-inclusive symbols, all-ness*). She often does not even show courtesy because the occasion to be courteous probably comes up at the last minute and she doesn't have *time* to be courteous.

She is not sufficiently feminine; she is too independent. She lacks imagination in thinking up new and different ways of keeping up interests, such as having new experiences together, picnics, entertaining interesting friends, or coming out in new, startling feminine clothes, *that will create new interest for me*.

She hasn't the art of talking things up—presenting unique sayings, stories, ideas, wit, humor, charm, flirting, (all thought out—not just spontaneous), or consciously doing these things for the purpose of stimulating interest and excitement in our marriage.

She talks and walks and does things too fast for me. She lacks imagination or ability at teasing me—kidding me—horsing around—making eyes—flirting, etc. She is too sensitive; cannot take constructive criticism or suggestions.

She does not have *time* for the above pleasantries because of lack of efficiency, planning, and organization. Also, she has not *realized* their importance, and, therefore, far underestimates their value in keeping our love a growing thing. She has not *studied* these niceties and the reasons for them and the art and skill of getting them over to me.

She does *not realize* that her marriage and her home come *first* for her own happiness. She thinks that she knows this, but she doesn't act as if she really does. These are her *primary* responsibilities—she has sixteen hours a day to do them well.

They are her job. Just like my primary responsibilities are to make a living for us both and provide the wherewithal for the luxuries and pleasures. I furnish the physical security firstly, and my marriage, family, etc., are secondary. I do not mean to say that I have no responsibilities in making my marriage a success, not at all; I understand this now better than ever before. I am only making the point that I believe, in the final analysis, that it is up to the wife to take the *leadership* in directing the *emotional course* of marriage, and that she has never *realized* and *understood* this.

If I am working eight hours a day to make a living, certainly I cannot use at least those same hours in figuring out ways and means of making my marriage and family life a success. It would not be fair to my employer. Furthermore, unless I concentrate on my work, I will not progress in it and will, therefore, slip back, eventually jeopardizing it and destroying the family security. These same eight hours are available to the wife to concentrate entirely, if she chooses, on making not only her marriage a success, but also her husband so happy and contented as a result that his work will become more and more interesting to him, not only from the standpoint of making more money, but also from the standpoint of improving himself so as to be able to give his wife more and more reason to be proud of him. It is my thought that in this indirect way she is his inspiration—the reason for his accomplishments, and she can properly take credit for this type of aid and help her husband, *but* it all flows out of the *little* things in their relationship in their home.

As Mr. Z read these 'gripes' to me I constantly pointed out his higher-order abstractions, his inferences, his alibis, and the use he made of all-inclusive symbols. I explained to him *dating* and showed him that he was judging Mrs. Z by standards inherited from the past, such as his mother's methods, his wife's attitudes and habits when she was just out of college, etc. I told him that while such standards may have some virtue, he must become pliable and agile to meet his wife's speedily changing growth and maturity. To continue with 'Mr. Z's gripes':

I am writing this out so that I will be able to debate the theory and find out what is wrong, etc. If I am right and someone else made her realize it, I think that she is capable of making the adjustment, but she will have to *work hard* at it and not slip into the old habits of *wasting time*. She will have to learn to be a clever organizer in her sphere of marriage, the boundaries of which are not clear to her now, nor to me for that matter.

She angers easily—loses her temper. She is awkward, not graceful. She lacks neatness. I don't like her clothes. She has no habit of routine; no time or place for anything. She is stubborn, strongminded, independent; I can't get my ideas over without debate or a quarrel, or maybe she will ignore them and go on just the same.

She cries easily. She forgets to get things done, or makes excuses why they weren't done. She comes to me to make decisions on small household matters that she should have solved and gotten done while waiting to ask me.

She copies others; falls into affected talking, baby talk, etc., depending upon the person she is talking with. She lets others persuade her to do something with them when she knows better or has planned to do some work, etc. She talks too much, doesn't listen, doesn't observe, contemplate, or think—just acts or talks without any basic pattern or purpose. She is inclined to be snobbish—to go with her club friends, and not be interested in meeting or talking to or being friendly with anyone on the lower range. She has been complimented so much on her mental ability that she plays it up a good deal.

With Mr. Z's permission I gave his wife this list and asked her to answer the allegations in writing without talking them over with him. It usually keeps both parties on the subject better and helps them to face facts less 'emotionally' if, in this stage

of the process of extensionalization, they write things out rather than talk them over between themselves. I believe Mr. Z was rather eager that she should see just how he felt so that she would understand him better.

This whole counseling problem of marital relationships is a good deal like a 'strip-tease' act, in which the the lady comes out clothed in inflated toy balloons. The counselor pricks these balloons one at a time until the naked facts are clearly revealed. The following are:

MRS. Z'S ANSWERS

True When Around Him:

Not gay, jolly, vivacious. Not at ease. Not calm and poised. Not cheerful. Not gracious or self-confident or able to rise to the occasion. The reason is that I am always nervous when I am with him because I know that I am sure to displease him in some way no matter what I do. The above are not true when I am not around him. However, I have never been the 'life of the party' type of person and have no desire to be. What is more, I do not think Z would like that type.

Not True At Any Time:

Not interested in his affairs or business problems. His security is mine and I have always felt it. I think the reason that he says this is that I have not encouraged him to re-discuss problems night after night. I did not and do not think that spending fifteen hours on business and nine hours sleeping makes a well-rounded and well-adjusted person.

No understanding of his problems, interests, or moods. I have never felt that I should pry into his business problems, since this would indicate a lack of confidence in his judgment and I felt he needed all of his confidence in business. I have never given unasked-for advice. As to his moods, understanding was not the trouble. Anything I did was wrong. If I was sympathetic, I should be gay and bring him out of it; if I was gay, I was unsympathetic and didn't understand him; if I ignored it, I was hard-hearted. I feel the misunderstanding was in himself and that he used me as a whipping boy. His girl friend 'understood' him, but she wouldn't after the thrill had worn off.

Not deliberate in thought or action. When I have a serious problem, I am very deliberate. I usually write out all the answers for and against it. In small matters, I can't waste my energy deliberating. I do what I want to do if it doesn't interfere with anyone else. If it does, I probably won't do it.

Selfish. I think I am less, rather than more selfish than most people. (I realize this is a high-order abstraction).

Not genuine—all for effect. What other people think affects me very little. Z's reference is to matters such as this—I like light-colored rugs and wood work because they please me aesthetically. I do not have dark rugs and wood work which his mother insists would be more 'practical' because they are easily kept clean. I think them impractical because they are depressing to me.

A snob. What people have or what position they hold means nothing to me. What they are and what we have in common is the sole way I judge them. Z is a snob. He likes to be thought of as belonging to the Boston Z's and always implies distant relationship. He likes bringing important names into the conversation. While he doesn't particularly like the Blanks (a very prominent family) as I do, he likes being able to say he knows them.

Too lenient with servants. I treat servants with the consideration with which I would wish to be treated, were I they. I do not think that they are a different species. I think they have reciprocal rights with me. I may not be as insistent on my rights as I should be.

Do not feel proud of him. I spent the first six years of my married life and a good part of our college life telling him that he had fine brains, good judgment, and excellent business sense. After he got the fine position he has now, he was, I think, offensively egotistical in his actions toward others. I tried to talk to him, but he has seldom felt that anything I had to say was worth listening to because I didn't know. I was and am proud of his success, but not the manner in which he accepts it. Two other things have contributed, I believe, to his attitude. One was the matter of his salary. I have never been sure that a time of depression was the time to insist on a salary increase, and I think he felt that I didn't think he was worth more because I advised caution and contentment with his present salary until conditions got better. Also, I thought his attitude about his salary was not a sound one. I felt that if he wanted an increase, he should set about getting one constructively or get out. I felt that all his griping was childish—unsound for both him and his company. The other was a remark I made on two occasions which I consider true, but it was an unfortunate one for me to have made. He said in public on these occasions that I had *never* done anything to contribute to our marriage; that I had completely fallen down on the job; that I had been a hindrance to him in a business way. I retorted, with some emotion, I admit, that I thought it unlikely that he would be where he is if it were not for me. I still think this is true. I think it doubtful that he would be an outstanding success if he had had a wife who complained, who nagged, and who was unwilling to gamble present security on his judgment. I also forced him to get out and meet new people, not that the people whom I forced him to meet helped him, but the experience helped him to be able to meet the people who did help him. He was not very successful with people in college.

Not a good hostess. People like to come to our house. I have the ability to put them at their ease. I have, with the exception of his boss and his girl friend, usually had to be host as well as hostess. Z has felt no obligation to see that cocktail glasses were filled, that guests were comfortable, until recently. In most respects he has always considered himself as a guest in his home without any obligations to his hostess.

Executive, no tact, or courtesy. The only thing I can say to this is that other people don't think so.

Talks too much. I enjoy it—other people enjoy it—I am extremely sensitive to whether I am boring people. Z seems the only person bored—so what! I think Z has little prowess in conversation; he has to either attend a lecture or give one. Any interchange of ideas or discussion is an argument.

Not True Now:

Not competent, efficient, and does not receive value for money. This was true for quite a while. When I was first married I had had no experience in housekeeping, cooking, or the handling of money. I was not trained for it and I made many mistakes. I received no encouragement from Z, so I ran away from my responsibilities. During the past year or eighteen months, it has not been true. I expect to improve all the time. I doubt if Z would have been a successful professional man if he had gone into it without any training and had received only destructive and discouraging comments all along the line. In fact, I doubt whether he would be a professional man at all under such circumstances.

Margin of money. Where did the radios, victrola, desk, bookcase, paint for bedrooms, locks for doors, also presents for him, come from? By his desires for what he wants and dissatisfaction with what he has, Z can keep up with anyone's margin of money.

True:

Does not pay bills promptly. I dislike doing it and procrastinate. I should not do this and will do better in the future.

Brings things to him for decisions. This is true and annoying to me to be in a

position where I have to. If I don't, what is done is not satisfactory. The last two incidents were the lock on the door and the bookshelves. His first remark about the lock was, 'It certainly looks cheap.' I could have gotten a fancy little number for twenty-five to thirty dollars, but then I would not have been genuine, but doing things for effect. His remark regarding the book shelves was, 'Well, they are certainly heavy and awful looking.'

Plans things for the evening. When exhibits bore your husband; when theatres are too expensive; when poker is boring as well as bridge; when he complains if he isn't in bed by ten o'clock, there is little interest in planning evenings, particularly when he is usually too tired to go if you do.

Reads instead of figuring surprises for him and doesn't get familiar (shades of his girl friend!) I tried to do all of the above when we were first married. I was very affectionate. Then it was a bore to him and embarrassed him; it was indecent. There was no tenderness or affection in his meagre responses. Now I have repressed myself for so long that I feel like a fool and it doesn't come naturally.

Talks and does things too fast. I think this is largely a combination of my physical make-up, my heredity and my early environment. I can try to correct it but doubt if the improvement would be great. I am not sure that I want to. Slowness is an attribute with which I can get along but see no reason to emulate.

Lacks imagination. I do not think he means imagination which I don't lack in all senses. I think he means originality, which I do. I might be able to acquire it to a degree. However, my bent is taking others' nebulous ideas and making them work. This also requires imagination of a different type. The imagination required for sensing others' troubles and feelings, I have to a high degree.

On being feminine. I don't know what to say because I don't know what it means. I have no desire to be a man. I am sympathetic, understanding and extremely kindly. I like to do things for others. All of which, I think, are feminine characteristics. To be a clinging vine, one needs something to which to cling, and I might add, clinging vines usually suffocate that to which they cling. I hoped, when I married, that I should have someone with whom to share my thoughts and interests, someone who would be proud of me, and who would give me emotional satisfaction. I soon found that I should still have to depend on myself for my happiness; this has made for independence rather than dependence. I should like nothing more than to be emotionally dependent. The only dependence I have on Z is financial, and this has often been offered to me grudgingly and with the feeling that it was a gift of *his* money, rather than a sharing of ours.

I am not petty, which quality, I believe, is sometimes considered feminine, probably because of my education. I am not devious because I can't be devious and respect myself, and I have learned that self-respect is essential for my happiness. I don't like to fool Z because the fact that it can be done makes me lose respect for him. I am intensely interested in children and their care, which I think is feminine.

I don't think he is wonderful. All I can say is, that testing the inference by the facts, it hasn't been empirically true. I think he is trite, inconsiderate, and insensitive. This is probably through ignorance. I think it is the man's place to take the leadership in emotional life, and this he has never done. He has tried, during the past year, but has apparently been unable to be happy if he spends any time on me. I think possibly his lack of satisfaction during these last eighteen months may have been because of his anxiety, but I am not certain that things would be different if he were feeling well. I do not think it is up to me to take the leadership in these matters.

Mr. Z was a little abashed at this reply and took it home to think it over. Since he was an experienced accountant, I asked him to make out an asset and liability sheet for his wife so that we might consider her as an organism-as-a-whole. The next time he came in, he brought the following balance sheet:

ASSETS	LIABILITIES
Attractive	_____
Pretty	_____
Good figure	_____
Good appearance	_____
Healthy (both physically and emotionally)	_____
Extremely intelligent	_____
Well-read	_____
Cultured	_____
Refined	_____
Good taste	_____
Conservative	_____
Well-liked	_____
Good judge of character (both men and women)	_____
Thoughtful	_____
Considerate	_____
Independent	_____
Does not nag	_____
Tolerant	_____
Sympathetic	_____
Good sport	_____
Willing	_____
Sincere	_____
Loyal	_____
Established personality in community	_____
Honest	_____
Clean	_____

I asked him where the liabilities were and he said, 'The further I get into this thing, the more ashamed and petty I feel. I guess I am a pretty poor sport.' Then he turned on me resentfully and said, 'You love to rub it in, don't you?' And, as is so often the case, the resentments each felt toward the other were turned on me. The husband and wife united against a 'common enemy'.

Their relationship with each other has constantly improved, until now they say they are happier than they have ever been and they intend to remain so. Eighteen months have passed and I am on a friendly basis with them again. However, the counselor usually becomes a symbol for the 'unhappy' times, and the painful and humiliating procedure of readjusting evaluations, so that he seldom has the same pleasant relationship with such clients again.

THE BLACK CASE

Mr. and Mrs. Black are a nice, 'middle-class' couple with two girls, eight and eleven. In 1931 they had a little house which they were buying, far out in the suburbs. He was making a moderate salary and they were content, and were gradually getting themselves into a more and more secure situation; they could see their way to educate their girls, own their home, etc.

Then in 1933 his company folded up and he lost his job. After some months he got another job which lasted three or four months until that gave out. Then he spent two or three discouraging years 'pounding the pavements' to pick up what few odd jobs he could. In 1938 he started a landscape-gardening business of his own, and

gradually began to make some money until they were beginning to see their way out again. His little outfit grew and expanded, and finally he hired a secretary, about his age, a widow with one child.

In the years between 1933 and 1938, however, the Blacks had lost their home and were renting. Among other things, the electricity and gas were turned off periodically for non-payment of bills, and a number of collectors came to the door about the furniture which the Blacks had mortgaged, about frigidaire payments, etc. Many times they had only potatoes and beans to eat. The children were not as blooming as they had been. There was strain on all the family, though they were pretty good sports about it. Mr. and Mrs. Black had to drop the music lessons for the children, which the father, especially, was eager to continue; finally the rented piano had to go back. These were just a few of the discomforts and humiliations that came to them.

Mr. Black, a sensitive man, got so he dreaded to come home. He often found his wife in tears because she had just had a round with a collector. The children were a constant reminder of his inability to give them 'the better things of life'. By 1938 the whole household (although his wife was a good sport and nagged to a minimum degree) had become a symbol to him of the dread years of the depression.

In the new office, however, he was taking in money; things were expanding; he was getting new orders. The widow was extremely sympathetic, and he began to think that she 'understood' him much better than his wife. Mr. Black even got to blaming his wife somewhat for the depression! But the widow, who had not had to live with him through this period, could see only his great abilities and the vast potentialities of the business, and encouraged him no end.

Finally he decided that he loved the widow and that he and his wife had never been congenial, and when his wife detected his defection, there was quite a blow-up.

They came to me. After getting the complete history, I was able to show him that he was projecting onto the home all the feeling-content of humiliation, disgrace, discomfort, inferiority, and inadequacy which the depression universally caused. His wife and home were the symbols for them, although on careful deliberation he agreed that his wife had been a good sport and sacrificed uncomplainingly and had had nothing to do with the causes of the depression or their misfortunes. The office and the widow had become a symbol of the success and future happiness which he hoped to attain. When he understood this clearly and saw that it was a matter of misinterpreting symbols, he changed his evaluations, etc., and he and his wife and family were brought together again.

THE Q CASE

This is the story of another couple whose symbols were sufficiently different to cause a break. She is the daughter of an admiral in the Navy and has been taught from early childhood to like the social, the outdoor, the virile things. The husband's father was a lumberman, but his mother's symbols were 'the higher things of life'. His parents were so much at variance that they soon separated. The mother kept the son and brought him up to be a student and a writer.

When he and the admiral's daughter had been married some eight years and had had two children, her family, to whom she was excessively tied, came to live with

them. The mother and sister persuaded her that she was living in impossible circumstances; that she should get a divorce because her tastes and her husband's were so different. He didn't care for horseback riding or the social Navy life, and she didn't care for the chatter of creative artists. So she left.

He came to me first, and then she. I taught them general semantics, and six months later they were back together. She, not he, decreed that her family were no longer to have so much to do with their life. This the mother and sister very much resented, and her father, the retired admiral, wrote a scathing letter, saying that she must have signed herself into slavery and gone back under very humiliating conditions imposed by her husband. She wrote her father a cheerful letter saying that these were not the facts, but that she could not see things the way her mother and sister did. They made her unhappy. She had tried following their advice by starting a divorce, but separation from her husband had not made her happy. She felt she must live her own life and be with her husband and children. To this her father replied with another scathing letter, in which, after making many unpleasant insinuations about her husband, he ended up with '. . . you have sold your mother and sister down the river.' This phrase had a strong 'emotional' effect upon her, and she wept and was quite upset when her husband came home that night.

After reading the letter the husband reversed his former pattern, which would have been to get indignant, tell her whole family off, and scold her for having such a family in the first place. He said, 'Now, just which river did you sell your family down? And how much did you get for them? I'll have to know because I'm making out our joint income-tax returns.'

She saw the humor of the situation and was particularly touched to have him back her up and take it in this extensional way. Any slight waverings she may still have felt between her loyalty to her former family and to her husband were finally entirely wiped out. Their adjustment and happiness is now complete, largely because they have both learned to interpret symbols more accurately.

* * *

In conclusion, in the field of marital counseling, as in most of the other aspects of my life both public and personal, I find the theories and devices of general semantics clear, direct and useful. In the last analysis the resentments or grievances or sexual conditioning, etc., which cause troubles in the marital relations become symbols greatly over-loaded with 'emotion'. If by careful analysis these symbols can be made conscious and free from 'emotional' over-loading by 'straining them through the cortex' so that the short-circuiting is stopped and the 'thalamic congestion' relieved, the results are salutary, and the marriage has a chance to survive.

EXTENSIONAL METHODS USED IN TEACHING HARMONIOUS MATING

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We like to 'think' that we are law-abiding citizens here in the United States. If the laws to which we are trying to adjust are man-made, then what we do will vary, depending on the state we live in. The lack of uniformity in legislative measures is very apparent in the rules designed to protect the family. In North Carolina, for example, a single act of adultery is not considered sufficient cause for divorce, even though it be followed by venereal disease, later transmitted to the legal mate. In Texas, the husband's adultery must be accompanied by desertion. In South Carolina, no divorce at all is permitted and adultery appears to be regarded as more excusable there than elsewhere. In general, the efforts of 'society' have been to prevent unwise marriages, and to hold together all marriages, no matter what later develops. This continues in spite of the disastrous results that we can see all about us.

Some states are just now enacting laws to prevent some unwise marriages by requiring physical examinations and blood tests before licenses to marry are granted. Only twenty-four states have so far adopted this measure.¹ As a result of these new laws, large numbers of people who would not ordinarily consult doctors are being forced to see them. This pressure makes many so resentful that they go to a neighboring state, where there are no such laws, in order to marry. For instance, a couple from California may go to Arizona or Nevada or Mexico. There they are given a license without either a physical examination or a blood test. They may have the ceremony performed a few minutes after filling out a license form. They may consider themselves so much 'in love' that they can not wait the three days required in California. After a few weeks, they may be violently 'out of love', arguing and quarreling and seeking divorce.

Without the ability to evaluate their experience properly, these people may blame one factor, such as the blond hair of a partner, for the failure to get along. Thereafter all blonds may seem undesirable. A woman patient of mine resented the fact that her black-haired spouse was not interested in her singing and also would not go dancing with her. She confessed to me that even at the time of her marriage she was annoyed by his swarthy complexion. She was convinced that she could never live happily with any man who had such physical characteristics.

Many people come willingly enough to the doctor before their marriage. They really want to know that they are physically fit for it. They are also asking for practical help in achieving a successful relationship. Some of these people have attended courses in family relations and know the type of help the doctor *should* give. Others,

¹ These are California, Colorado, Connecticut, Illinois, Indiana, Iowa, Kentucky, Maine, Michigan, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Virginia, and Wisconsin.

less informed, leave the matter entirely to the individual physician and accept whatever he advises them.

Only recently have our medical schools taught techniques of successful mating and use of contraception scientifically. Many physicians do not feel any obligation to inform themselves on these matters nor do they look for maladjustments in this relationship to account for symptoms of 'indigestion', 'heart trouble', etc. They may still identify contraception with abortion and have nothing to do with it. Others may listen to the sales talk of men who have contraceptive devices to sell and 'think' they know *all* about it. They may recommend one device or another, depending on their 'private opinions'. Occasionally, 'religious' convictions 'blind' them to the need and so they give nothing at all.

So we have great confusion among doctors, at a time when we have a fine opportunity to help prevent many of the mistakes that are made through ignorance or false knowledge. What can we do about it? How can we develop agreement among the doctors? The answer came to me clearly and precisely in June, 1939, when I attended a seminar in general semantics in Los Angeles conducted by Alfred Korzybski.

There, for the first time, I became aware that human beings possess nervous systems which need to be trained in proper evaluation, if they are to be used efficiently. It never had occurred to me before that words, which are only symbols for 'things', situations, relations, etc., could be identified with the 'things' themselves; nor that training in making proper word-fact relationships could give a fine precision tool for correcting false knowledge and disagreements in many fields of human activity. However, as the training in the use of the extensional devices of general semantics proceeded, and the use of the structural differential was made clear, I began to get the 'feel' of this new method. I realized that by the consistent use of it, all doctors could share and apply their knowledge and experience. Also they could become better oriented socially themselves; stop making statements about statements they only 'believed' to be true, etc.

The first time I applied the new techniques, I obtained results that were very gratifying. A girl was referred to me by another physician with the diagnosis of 'pseudo-pregnancy'. She was twenty-eight years old, unmarried, and had been having sexual relations infrequently with an older man. She enjoyed the experiences at the time but always felt guilty and worried about them later. The last time she was with him, a violent quarrel had occurred. The next morning she felt nauseated, had a severe headache, and was generally ill. She went to visit a friend who was about two months pregnant and who was also suffering from nausea and headache. The girl began to worry about the possibility that she, too, was pregnant. Even though she menstruated for the next two months, the conviction of her pregnancy grew and she consulted a doctor. On examination, the uterus was found to be of normal size and the Asheim-Zondek test was negative, so she was told that she was 'imagining things' and to go home and forget it. But the symptoms persisted. She kept annoying her physician until he finally sent her to me as a 'joke'. After listening to the details of her story, I said to her, 'The word "pregnancy" is not the actuality. It is itself only scribble marks, a symbol for a condition. The symptoms of headache and nausea may be part of the pregnancy picture but they are produced by many other conditions as well. For instance, they can be produced when the thalamic region of the central nervous

system is stimulated by the "emotion" of fear.' I drew a crude diagram of the nervous system to show her how that could take place. 'In order to have the symptoms be a part of a pregnancy,' I said, 'we need to find in you a uterus the size of a five months pregnancy.' I let her see and touch a model of such a uterus and then one of normal size. I then drew carefully for her on paper, as near to actual size as possible, my findings on examining her pelvis. She discovered, by her own eyes, that her uterus was similar to the 'normal', non-pregnant organ. She gave a big sigh of relief and her symptoms disappeared in a few days.

However, this very brief exercise in differentiation relieved only the distress of the moment. There was much more to be done to help her adjust to 'reality'. I give this example merely to show that by handling and examining objects, noticing the many characteristics on the macroscopic level and then seeing in diagrams what goes on at microscopic and sub-microscopic levels, the thalamic region is affected and the cortical region automatically analyzes and differentiates, alleviating neuro-semantic tension.

This girl and all young people seeking mates can be guided towards more successful choices by drill in the extensional devices of general semantics. These methods give more adequate means of determining how long 'love will last' than by depending on 'feelings' alone. To discover that 'man' does not exist, but only Smith₁, Smith₂, etc., all absolute individuals, leads to very beneficial differentiations. Instead of becoming deeply 'in love' because Smith₁ possesses shiny wavy black hair and dances well, the girl will look for many more characteristics (an important one, the ability to give as well as take new 'ideas'). This teaching lends itself well to large classes, and we can hope that it will be given more generally in the future. It is comparatively easy to teach harmony in mating when there is co-operation and real friendliness in the other relationships of life.

However, lack of mutual interests other than 'sex' can gradually destroy the first pleasures of that relationship or perhaps inhibit it altogether. This seems especially true in women, who generally react more 'emotionally' than men. The strong feelings of fear and anger, aroused either from actual happenings in the environment at the moment, or from 'imaginings', affect the sympathetic nervous system and can completely block the normal 'sex impulses'. These latter stimuli are carried by the sacral branches of the autonomic nervous system, and usually need augmentation by happy 'emotions' to work well. Appreciation of these facts will help 'real lovers' to delay their reactions, and look for satisfactory solutions of problems. They will spend more time in preparing an environment of beauty and order, which will have a relaxing effect on them and make possible the deeper happiness of mating.

There have been two very common fears in the past that have often blocked woman's satisfaction. These are fear of pain at the time of intercourse and fear of pregnancy. Methods of overcoming them are legion but most of them have overlooked the factor of training the woman to be at ease with herself. In most instances she needs to learn how to be responsible for her own happiness and to co-operate with her husband. If the husband stretches the hymen himself, the sensitive woman may project her pain on him and begin to dislike him very actively. If the doctor injects novocaine into the area and cuts the obstacle, there will be a point of tenderness that persists for a while. Also the woman will miss an educational experience that is beneficial. Let us be aware that the hymen is composed of skin containing many

elastic fibers. This can be gently stretched before marriage by a small vaginal speculum; or better, by graduated sizes of test tubes. These not only enlarge the opening effectively, but the woman can herself finally pass the tube that is comparable in size and shape to the penis. She is thus convinced that she will not have pain or any discomfort during actual mating. This will help her to relax and use her levator-ani muscles well. If she presents herself for training at least six weeks before her marriage, all but the rarest types of hymens will yield to this treatment.

When the dilatation has been completed, we are ready to examine models of the genitalia of both sexes and try to discover together a method of preventing the fear of pregnancy that will be effective and yet allow for free functioning of the parts. For the male there are several methods of preventing the sperm from entering the female and fertilizing the ovum. Most of them involve undesirable tensions and interruption of function which is disturbing to sensitive individuals; other procedures may result in permanent sterility and later unhappiness.

For the female, there are also many methods of preventing fertilization which offer various degrees of security. The most effective and aesthetic is also the least expensive and easiest to carry out. The facts of the anatomical structure and neurophysiology of the pelvis and vagina on which the use and effectiveness of this method depend are explained and demonstrated with the model and verified by the woman's own observations and self inspection.

One of the great semantic benefits of this method is derived from the fact that the procedures can be attended to by the woman several hours before and after the intercourse. So at the time of love-making, both partners can be spontaneous and natural. This method trains the woman to be at ease with herself. She can easily learn to adjust and check the device herself. The time and effort needed to learn the procedures are well repaid by the assurance and confidence this method gives.* The training in handling the parts caused one woman to say, 'When I first came into your office I was very embarrassed. Now I am embarrassed because I am not embarrassed any longer.'

We have removed two common fears that inhibit the usual woman. We now need to help the couple to be creative and imaginative in their love life. One very practical help comes in suggesting that they do not use the usual physiological or the slangy terms for the sex organs in describing to each other their 'feelings'. We have all lived in a world where dirty stories and vulgar remarks have been made concerning them. If the same terms are used at the time of love-making, we are unconsciously reminded of things unpleasant and disconcerting. It is suggested that more poetic and aesthetic language be substituted. Also we explain the importance of the difference in timing usual between the sexes. The man who realizes his first pleasure and duty is to prepare his wife by gentle and skillful love play, becoming so absorbed in that, that he can forget his own desire for a while, can hope to accelerate the natural slowness of the woman and delay his own faster reactions. Thus the peak of experience will come for both at the same time.

Thus, we come to the end of a very brief, very incomplete description of some of

*In her paper Doctor Caldwell described several methods for both men and women which she explains in detail when she extensionalizes the problems of harmonious mating for her patients. The description is by necessity technical and can not be printed here.—*Editor.*

the factors necessary to harmonious mating and the part educator-physicians can play in their achievement. We have become aware that much more than a physical examination and blood test is necessary as preparation for marriage. The technique of neuro-semantic relaxation discovered by Korzybski is taught by us because among others it helps greatly in gaining ease and co-operation. As the knowledge briefly described here comes to be more generally used we can hope to find more and more examples of happy marital unions that are truly symbolic of oneness in 'all' things.

In closing, I wish to express my deep appreciation to Alfred Korzybski for his patient teaching of his general theory of evaluation to me. Following his recommendations for the consistent use of models and diagrams, along with his structural differential and the extensional devices of his general semantics, has greatly increased the effectiveness of my work and made this paper possible. Let us remember that what I have written is *not* 'all' that could be said on the subject. Also that anything I have described in words is not the actuality. May I also add, these methods are only good until something better is produced.

PART II—*Continued*

Mental Hygiene Aspects of Individual and Public
Psycho-Logical Adjustments

Section B

DEMOCRACY DEPENDS ON LANGUAGE

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One of the chief requirements of democracy is interpretation, one to another, of the diverse perspectives of individuals and groups. Particularly it is required that the vital interests of all sorts of people be communicated to those in power. If this is to be effective, communication must be far more than merely stating the facts. It must be an impelling, mutually transforming interchange which initiates a remaking of the social and physical conditions to meet the needs of all concerned. This requires a language which is effective in shaping the 'minds' of those who use it. The human 'mind' is dependent upon the use of language. But after early youth is past, the creative efficacy of language declines unless care is taken to keep our speech potent in this regard.

In order to have an effective language of democracy this language must be fully developed and expressive in at least six different ways. We shall call these ways the six dimensions of language and describe them and how they should work together as a functioning whole.

THE LANGUAGE OF DEMOCRACY MUST BE DESIGNATIVE

Language sets up an order of distinctions and connections whereby a process of nature is mapped into a system of events. These events must be so distinguished and related to one another that when some few of them are happening one can know the character and interrelations of all the others by way of the systems of connections which these few represent. Really what these few represent is a system of connections which may or may not apply to actual events. But in so far as these systems do apply, the world takes on 'meaning'. 'Meaning' may be considered as any system of connections whereby a few happenings become representative of other happenings and possibilities.

THE LANGUAGE OF DEMOCRACY MUST BE ADUMBRATIVE

In its designative function language gives us a map of what some part of the world might be. But a map never represents the whole of that reality which is mapped. It does, however, adumbrate it. That is to say, it makes known to us, indefinitely but indubitably, that there is far more involved than the few features sketched into the map. There is a rich matrix in which the designated features are imbedded. Some language more effectively than some other suggests this background and matrix by way of a vague shadowy 'meaning'. What this fullness of 'reality' may be through which the points and connections of the map are drawn, we cannot specify. But we 'know' it is there. A map can be filled in with more and more detail indefinitely. So also can the designated portions of reality which any set of words may indicate. We may not have the language with which to do this, but there is no limit to the extension of language by creation of new signs and new syntactical combinations. Some part of this which is to be specified but is not yet, is what a language may adumbrate.

Some special symbols adumbrate much more effectively than some words. A ring, a gesture, a tone of voice may adumbrate far more than we can accurately specify by the designations of language. Powerful emotions, quaking terror, glowing love, may be awakened by what some symbol adumbrates.

Metaphor and indirection adumbrate. Perhaps always the most important 'realities' which concern us can be caught in the net of 'meaning' only by way of metaphor and indirection. Perhaps always these most important 'realities' are too complex and too deeply involved in our own personalities to be otherwise expressed. The great 'emotions' are almost always responses to what is adumbrated rather than to what is clearly and comprehensively designated. The common people perhaps more regularly than the sophisticated, deal with 'realities' adumbrated more than designated.

THE LANGUAGE OF DEMOCRACY MUST BE SYNTACTICAL

There is a certain order or structure according to which the signs of a language must be combined in order to 'make sense'. The scope and power of a language to designate, adumbrate, and to awaken an intuitive awareness of the 'qualities' pertaining to the fullness of what is represented, depend upon the ways in which the signs are combined quite as much as upon the diversity of signs that are available. The syntactical structure of a language adapted to fulfill these functions can be indefinitely improved by dialectic. Pure dialectic is the syntactical use of language with other functions reduced to a minimum.

THE LANGUAGE OF DEMOCRACY MUST BE ACTIVATIVE

Language activates conduct, attitudes and sentiments. Since democracy rests upon persuasion leading to action it is obviously important that a language be fully activative. This function may be diminished or magnified according to the way in which language is used and the associations formed in learning it. This activative function, however, should be kept in close and proper correlation with the designative, adumbrative and intuitive. Democracy has been said to be *rule by talk*. But so also is a dictatorship. The difference is that in a dictatorship the activative function of language as used by the dictator loses its connection with its essential designative and adumbrative functions. Such dismembered language moves people to mass action without informing them of the 'realities' involved. This is the difference between pernicious propaganda and that kind of propaganda which is necessarily involved in all social control.

'Forward! March!' in some military contexts may be activative pure and simple. There may be scarcely any sense of adumbrated reality. While some syntax is implied none is functionally used. Designation also is more implicit than actually present. Such language is not appropriate to democracy. The language of democracy must not be merely activative with all the other functions pruned down to a minimum as in the example given. The language of democracy must be fully activative but this function must be merged with all the others so that the whole work of language is accomplished and not this alone.

THE LANGUAGE OF DEMOCRACY MUST BE INTUITIVE

Our language must generate intuition of feelings, imagery and sense quality which others are experiencing or have experienced. Of course no one can ever know to what

degree the feeling, sense and imagery which I experience, are similar to what he experiences. But through language such qualities of experience can have similar distinctions and connections, be associated with similar behavior and the same structure of events in space-time.

Through proper use of language these feelings, sense qualities and images may be so distinguished and connected that a great abundance of them can be experienced in a single intuition. This is what we mean by the enrichment of experience and the growth of conscious awareness. It gives to life its flavor and its value. Hence nothing which language can do is more important.

This intuitive function of language we see most clearly in literary art. However, it is just as common and perhaps even more effective in the communications of the intimate group and of primitive peoples. Any people inheriting a single, unifying, dominant and ancient tradition have a language which takes on this intuitive function with peculiar potency.

On the other hand technical, scientific language has very little of this power to engender intuition of feeling, sense and imagery. In a highly technical civilization like ours, where no single, dominant, coherent and inclusive tradition holds sway, there is always the danger that language will fall apart into mutually exclusive kinds. One kind will be artistic, promoting richness of qualitative experience, but lacking scope and accuracy of designation. Another kind will be accurate enough and may have scope, but it does not engender intuitive awareness of feelings, sense and imagery.

This separation of language into sub-languages, each fitted to its own function and each creative of its own exclusive way of evaluating and living, is disastrous to democracy. It makes impossible that communication of the whole body of interests from group to group which transforms them into a creative synthesis whereby each group is enriched by participating in the life of the others. In this way their respective interests are continuously recreated as new conditions develop and innovations are introduced. Specialized sub-languages, however, do not permit this.

The people, as over against the rulers, have power to shape the order of life in which they live only as the language they use creates and again recreates that order. Only as language shapes the interests of each in conjunction with the others, is this accomplished. The people are creative through talk and only as their talk is creative do we have a democracy. This entails a language which can express life's interests without segregating them into separate classes and groups.

When intuitive language is reserved for one area, say that of art and love, a designative language developed for another, say that of science, and an activative language for still another, say that of management, then language ceases to express the 'power and meaning' of life in full circle. Then language ceases to be creative of life as a whole unless these specialized languages feed into a common language which is expressive of life's unity. Without such a language-of-the-people potently expressive, the people lose their power to create the order of life in which they live. Then democracy fails, no matter how punctiliously the dead 'rights' and mechanisms of democracy may be preserved. The people can be sovereign only by way of the six-dimensional language of democracy.

THE LANGUAGE OF DEMOCRACY MUST BE FANCIFUL

Fanciful language awakens a host of random associations. A cloud of images, suggestions, accidental ramifications, accompany the use of such language. We call these fanciful because they are extraneous to what is designated, extraneous to what is adumbrated, extraneous to the syntactical structure, extraneous to what is intuited and to what is being done. Yet this sportive play of associations and suggestions is like a splutter of sparks sending little beams of life into the realm of the unconceived and unimagined. From time to time they chance upon something that is important. Some new insight, some new venture of the spirit of man, may thus be opened which in time may save from disaster or solve some important problem or add a new dimension to the riches of experience available to the human 'mind'. This *fringe of irrelevance* that accompanies language makes us aware of that aura of suggested half-meanings, now dim, now brilliant, which augments the creativity of symbols.

LANGUAGE OF THE PEOPLE

The six-fold effectiveness of our developing democratic language determines how fully the valuings originating with the individual or subordinate group can feed into the valuings which control the managers of society. Democracy requires a language-of-the-people which can achieve and continuously recover a generalized perspective. This perspective must include the different interests of life so far as possible and must be continuously created by compounding the perspectives of individuals and groups into one common perspective, so far as that can be approximated. The continuous development and conservation of a language capable of communicating the interests of each to 'all' in this manner is the prime responsibility of those who are artists in the use of language and those who are scientific students of it.

General semantics as formulated by Alfred Korzybski is a scientific methodology by which current languages can be continuously criticized, corrected and developed. Until now such a science, perhaps, was not so urgently needed. But with the complexity and delicate balance of all the activities of living today, with the intricate inter-involvement of diverse peoples and cultures, and with the acceleration of social change reaching the tempo of revolution, such a science is indispensable. The basic importance of language for all that makes man human, and for democracy in particular, would seem to make this work of general semantics imperative.

That sovereignty of the people which we call democracy is not achieved by popular vote, nor by freedom of private business enterprise, nor by giving jobs to everyone and a fair share of the proceeds of industry, nor by any kind of social mechanism. Any of these may be indispensable at times, but not any nor all of them is sufficient. The people achieve sovereignty through expressing themselves in a language which continuously creates the 'minds' and interests of all in such a way that (generally speaking) individuals and groups will not want to seek goals destructive of the ends of others. Such a community should be described as democratic, no matter what may be the system of government, industry and business. Without such a language and without such self-expression no aggregation of people functions as a real community and no such aggregation constitutes a democracy, no matter what may be the methods used in government and business. Language nurtures democracy when language carries the full load of life's 'meanings' from each to all and all to each within the communicating group.

GENERAL SEMANTICS AND PUBLIC SPEAKING*

PERSPECTIVES ON RHETORIC COMPARED: ARISTOTLE, HITLER
AND KORZYBSKI

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There are many ways of looking at human behavior. As a result we may have 'many psychologies', rather than 'one psychology'. The same is true of geometry. Euclid's way of looking at the patterns and forms of measurement is but one along with the geometries of Lobatchevsky and Riemann. Similarly, there are many 'philosophies'. One has merely to mention the names of Plato, Leibniz, Dewey and Croce. In this paper I shall be urging that rhetoric or the art of public speaking is not to be evaluated from one point of view only, but from many. In doing that I shall try to show simultaneously where and how general semantics contributes one other way of looking at the purposes and functions of speechmaking.

In the attempt to describe what it is that students of public speaking and general semantics are trying to do, using the method of contrast, I shall focus on three orientations or perspectives of rhetoric as they appear in three books: Adolf Hitler's *Mein Kampf*, Aristotle's *Rhetoric*, and Alfred Korzybski's *Science and Sanity*. I take the third book as the most complete statement of general semantics and its relation to rhetoric.

Let me begin with Adolf Hitler. There is no special chapter on public speaking in *Mein Kampf* but in the sections on Propaganda in the Reynal and Hitchcock edition there is a host of specific, rule-of-thumb injunctions for the speaker which grow out of Hitler's assumption that in a world of weak men the role of the leader is the basis of politics and all human affairs. The major tenets of Hitler's art of public speaking might be summarized this way:

That you must always exaggerate your claims, even if fantastically; that you must never concede the slightest justice to your opponent's cause, else men will begin to doubt yours; that your platform, once formulated, must remain fixed; that you must hammer away always at a single idea; that the continued iteration of it will finally induce belief; that there is nothing so likely to be believed in the end as the daring and the unimaginable.¹

But if these are Hitler's strategies, what is his over-all view of their use? What is this art to be used for? He has been quite explicit and I quote him directly.

*At the Congress, Mr. Lee spoke on the subject of general semantics as applied in the practice and teaching of public speaking, but did not supply a manuscript. Subsequently he was unable to prepare a manuscript for publication, due to his joining the Army Air Corps. From Mr. Lee's extant writings on the subject, the present article has been chosen as most appropriate in the context of the Congress. We are glad to be able to republish it with the kind permission of Mr. W. Norwood Brigance, Editor of *The Quarterly Journal of Speech*, in which journal it appeared December, 1940 (Vol. XXVI). A few emendations in the methodological formulations have been introduced by me.—Editor.

¹Max Lerner, 'Hitler as Thinker,' *The New Republic*, CI (Nov. 22, 1939), 132.

Propaganda's task is . . . not to evaluate the various rights, but far more to stress exclusively the one that is to be represented by it. It has not to search into truth as far as this is favorable to others, in order to present it then to the masses with doctrinary honesty, but it has rather to see its own truth uninterruptedly.²

The more modest, then, its scientific ballast is, and the more it exclusively considers the feelings of the masses, the more striking will be its success. This, however, is the best proof whether a particular piece of propaganda is right or wrong, and not the successful satisfaction of a few scholars or 'aesthetic' languishing monkeys.³

His Minister of Enlightenment Herr Goebbels has perhaps best summed up the position in these words: 'Propaganda should not be in the least respectable; nor should it be mild or humble; it should be successful.'⁴ There is no point here in telling you what this attitude towards rhetoric has accomplished; there is relevance only in an attempt to characterize it.

This is the Rhetoric of Power. We have here the bald statement of one who thinks of public speaking in terms of those tactics, strategies, manoeuvres which will get the user what he wants. It is the utterly practical attempt to organize whatever means exist to mobilize the 'minds' of the audience. *Mein Kampf* can thus be conceived as a 'ready reference' for those 'conscious ways of making the speaker's position more efficient,'⁵ of those modes of approach which will command acceptance for one's own doctrine. This is the Rhetoric of Power in which only the end-result is of importance.

When one leaves 'the crude but effective magic' of Adolf Hitler for the *Rhetoric of Aristotle*, one is struck by certain similarities. Thus, Aristotle in three places suggests the value of repetition; there is no mention of slogans, but there are five pages on maxims; in two places Aristotle argues the necessity of recognizing the limited capacities of the 'masses'; and there are forty-one pages on the means of stirring the 'emotions'.

Now, if one considers the *Rhetoric* as a whole, it is clear that it is designed as a handbook of the ways and means of obtaining the speaker's purposes. As Rowell put it:

The main concept from which Aristotle proceeds is the idea of persuasion. This term 'persuasion' defines for him the general aim of oratory. He uses it in the inclusive sense which makes it embrace all the elements involved in the speaker's effort to influence his audience.⁶

And in these respects the *Rhetoric* of Aristotle is similar in orientation and purpose to that of Adolf Hitler.

But there are differences that should be underlined. Speaking of Aristotle's fundamental position Lane Cooper says, 'the emphasis is always upon the nature of the person to be persuaded, and the means by which it is possible, and just, to persuade

² Adolf Hitler, *Mein Kampf* (New York: Reynal and Hitchcock, 1939), p. 236.

³ *Ibid.*, p. 233.

⁴ Richard S. Lambert, *Propaganda* (London: Thomas Nelson and Sons, 1938), p. 153.

⁵ Kenneth Burke, 'The Rhetoric of Hitler's "Battle",' *The Southern Review*, V (Summer, 1939), 15.

⁶ Edward Z. Rowell, 'Prolegomena to Argumentation,' *Quarterly Journal of Speech*, XVIII (April, 1932), 226.

him.⁷ There is here reference to the *moral purpose* of the speaker. That is, Aristotle recognizes that Rhetoric is a neutral instrument, a 'faculty' which can be used for good or evil, for the 'greatest blessing' or the 'utmost harm', for 'sophistical speaking is made so, not by the faculty, but by the moral purpose.'⁸ In short, rhetoric is a useful art which should be 'rightly and honestly' practiced. In addition, Aristotle would urge the study of this art not only as an instrument of persuasion, but also as an instrument to be used against an exploiter, and to 'prevent the triumph of fraud and injustice.'⁹

The difference here can be underscored by asking whether Hitler would be willing to permit his methods to be used against him.

There are other differences. First, is Aristotle's analysis of nine sham enthymemes, those forms of argument 'that look genuine, but are not.'¹⁰ And immediately following is his analysis of the methods of refutation, by means of which one may answer statements which though illegitimate may from force of statement pass as legitimate.¹¹ It is important, then, to notice that Aristotle indicates (as Hitler does not) that a speech may be successful even though it is unjust in its purpose, and spurious in its argument.

To summarize this statement thus far, I should say that the rhetorics of Aristotle and Hitler are concerned with the means of making discourse effective, with the art of organizing statements for the settled purposes of the speaker. Each is concerned with telling the speaker how to 'get across' his notions. But Aristotle's position is without the crassness of Hitler's. It is rather softened and leavened by the sense of moral purpose. It is thus that Aristotle's rhetoric can be characterized not as a Rhetoric of Power, but as a Rhetoric tempered with notions of Ethics.

Now there remains a question which neither of these rhetorics undertakes to raise. It has to do with determining whether or not what a speaker says *properly evaluates* the situation with which he deals; whether or not what he says is an *adequate representation* of the actual facts or happenings of which he speaks. This may be clarified by an analogy.

Let us take some actual territory in which cities appear in the following order: San Francisco, Chicago, New York when taken from the West to the East. If we were to build a *map* of this territory and place San Francisco between Chicago and New York thus:

Actual Territory	San Francisco	Chicago	New York
Map	Chicago	San Francisco	New York

we should say that the map was wrong, or that it was incorrect, or that the map has a *different structure*, from the territory. If, speaking roughly, we should try in our travels to orient ourselves by such a map, we should find it misleading.¹²

Similarly, we should be disturbed if the movie film 'The Return of Mr. Moto' were to throw on the screen the events of 'Goodbye, Mr. Chips.' And again, we do

⁷ *The Rhetoric of Aristotle*, ed. by Lane Cooper (New York: D. Appleton and Co., 1932), p. xxi.

⁸ *Ibid.*, I, 1, 1355b.

⁹ *Ibid.*, I, 1, 1355a.

¹⁰ *Ibid.*, II, 24, 1401a—1401b—1402a.

¹¹ *Ibid.*, II, 25, 1402a—1402b—1403a.

¹² Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Lancaster, Penn.: The Science Press Printing Co., 1933), p. 58.

not expect that a letter addressed to Henry Adams of Chicago, will find its way to the Grand Llama of Tibet. In short, we expect our maps to represent their territories, our film titles to indicate the appropriate films, and our letters to reach the designated persons. In like manner, we expect our weather vanes to point to the way the wind blows, our thermometers, pressure gauges, and scales to register the degrees of heat, force and weight that exist at any moment. If these instruments, indicators, or signs fail to perform their function of representing adequately the phase of 'reality' to which they are assigned—we should hurry to replace them. In the same way, should we not expect that our language, our words be used, so that they adequately represent the facts, feelings, happenings, etc., to which they are intended to refer?

It is in the effort to achieve this map-territory, this language-fact correspondence that general semantics and Alfred Korzybski make their contribution to a linguistic analysis of rhetoric. General semantics must not be thought of as a branch of philology or as an instrument for popular debunking, but as a natural science concerned with the problems of values and so of interpretation, i.e. with the whole process whereby men in speaking evaluate properly the happenings, objects, feelings, labels, descriptions, and inferences with which they are dealing. Put another way, the book, *Science and Sanity*, is an attempt to anatomize our linguistic usages to find wherein they falsify 'reality' and mislead us, and the means whereby this falsification may be corrected.

It is not possible in this paper to tell of the fertility and scope of this analysis of 'significance', as it might be applied either to the teaching or practice of public speaking. I can merely hint at a few of its relevant topics. Thus, for example, in 1776, in his *Principles of Rhetoric*, George Campbell included a very 'modern' chapter entitled, 'What is the Cause that Nonsense so often escapes being detected both by the writer and by the reader?' The question might be answered this way: just as one can draw a map that refers to no existing territory, so too, one can *talk*, without having that talk represent actual facts and events; for example, I can *say* that the 'sun rises in the East'; I can *say* that coffee and brandy are being served where you are, even though you look in vain for them. In his little book, *The Standardization of Error*,¹³ Vilhjalmur Stefansson reveals that though we can *talk* about an ostrich who sticks his head in the sand when danger approaches, no human being has ever seen or photographed the actual event, and thus, when we talk about reference to observable facts our talk may prove to be nonsense.

Then, too, Korzybski has discovered a way of protecting us against those 'debaters' who would confuse an approximate description of the world with a complete description of it. Fundamental in language-fact relations is the realization that one can never make a statement which will give the total details of any event—that there never can be a speech or newspaper story which 'tells all,' *because* 'we see what we see because we miss all of the finer details.'¹⁴ And that, *above all*, a consciousness of such omitting (i.e. abstracting), an awareness of the 'partial' character of our statements is the beginning of sanity in expression.¹⁵

Again, Korzybski has called attention to the fact that the search for the absolute

¹³ New York: W. W. Norton and Co., 1927.

¹⁴ *Science and Sanity*, *op. cit.*, p. 376.

¹⁵ *Ibid.*, Ch. XXVI.

'meanings' of words is fraught with disillusion because words carry a multiplicity of 'meanings', no one of which can be nominated the only interpretation, and 'meanings' depend upon contexts, verbal, psycho-logical, situational, etc.; additionally some of the most important words are *multiordinal*, i.e. their 'meaning' in any context, depends on the level (order) of abstraction, etc.¹⁶ This point can perhaps be somewhat clarified by pointing out that we use symbols (words) much as we do vessels, which can be filled variously.* Just as a cup will hold water, sand, or any other liquid or solid—so too, any word can be filled with many contents, in many contexts. Even the word 'is' has in common use at least four well-differentiated senses. Confusion arises in discussion when one implies that a word 'means' this or that only, when a speaker assumes, for example, that words like *education*, *propaganda*, *persuasion*, *discussion*, *truth*, *reality*, etc., mean only what he says they mean—when the speaker forgets that there are no absolute 'meanings'. It is helpful in this connection to remember that the dictionary is merely a record of word usage, and not a legislative device.

Further, Korzybski has shown that too often we 'split verbally what empirically cannot be divided,' that though we 'know' that any organism must be treated as a 'whole', that there is integration of function we, nevertheless, *talk* of 'body and mind', 'reason and emotion', 'thinking and feeling', 'heredity and environment'—as if each were a separate entity.¹⁷

But I intended only to hint at some of the array of findings that come from the notion that the very structure of our ordinary language may distort what we wish to convey, mislead ourselves, and others, and actually restrict our horizons of investigation.¹⁸ There is nothing esoteric or mystical in *Science and Sanity*, for as Korzybski himself says:

Curiously enough, the principles involved are often childishly simple, often 'generally known', to the point that on several occasions some older scientists felt 'offended' that such 'obvious' principles should be so emphasized. Yet my experience, without exception, was that no matter how much these simple principles were approved of verbally, *in no case* were they *fully applied in practice*.¹⁹

And he is clear in what it is he believes that general semantics must do. In his words:

All our doctrines, institutions, etc., depend on verbal arguments. If these arguments are conducted in a language of wrong and unnatural structure, our doctrines and institutions must reflect that linguistic structure and so become unnatural, and inevitably lead to disasters.²⁰

¹⁶ 'The test for the multiordinality of a term is simple. Let us make any statement and see if a given term applies to it ('true', 'false', 'yes', 'no', 'fact', 'reality', 'to think', 'to love', etc.). If it does, let us deliberately make another statement *about* the former statement and test if the given term may be used again. If so, it is a safe assertion that this term should be considered as *multiordinal* . . . The main point about all such terms is that, *in general*, they are *ambiguous* . . . (they) have only definite meanings on a given level and in a given context.' (*Ibid.*, pp. 433-434.)

* For the dangers involved in using this analogy, see Allen Walker Read, 'The Lexicographer and General Semantics,' in this volume.—*Editor*.

¹⁷ Cf. the numerous references to *Elementalism*, *Ibid.*, pp. 64, 87, 107, etc.

¹⁸ D. G. Campbell, 'General Semantics in Education, Counseling, and Therapy,' *National Education Association Proceedings*, 1939. (This paper is available as a reprint at the Institute of General Semantics, 1234 East 56th Street, Chicago, Illinois.)

¹⁹ *Science and Sanity*, p. 539.

²⁰ *Ibid.*, p. 59.

I shall conclude with a comparison of the three perspectives.

Pavlov has said that 'men are apt to be much more influenced by words than by the actual facts of the surrounding reality.'²¹ It seems perfectly 'obvious' to say that 'the map is not the territory, that words are not the facts to which they refer, that symbols are not the events which they are supposed to represent.' Yet it is just as 'obvious' that men do react to the maps, words, or symbols *as if these were* the territory, fact or happening. In a recent class forty-seven out of forty-nine students thought that the word *prostitute* symbolized something unpleasant, someone who was socially 'bad', yet a week later when the instructor introduced a young woman who spoke on 'Social Maladjustment' the class of forty-nine agreed that both her person and her analysis were quite 'good', in spite of the fact unknown to the class that the young woman was making a living in a nearby house of prostitution. That class responded to the 'word' and not to the 'fact'.²² It is not difficult to respond similarly to the words 'Communist', 'Catholic', 'Alien', 'Truth', 'Liberty', etc., as if they were the non-verbal facts and living situations rather than mere words. It is as if one were to try to keep warm with the trunk-tag instead of the fur coat inside the trunk.²³ Yet it is the response to words and symbols without regard for the maladjustment that may result, that seems to be the objective of the Aristotle-Hitler rhetoric. Theirs is the attempt to achieve response to the utterance of the speaker—and not to the facts which that utterance may or may not represent. And the aim of the rhetorical system which you will discover in Korzybski seems to be the prevention of such 'un-critical response' and the substitution of responses which more adequately evaluate the situations.

I have had no intention of suggesting in this paper that there is an antithesis or opposition between these three linguistic attitudes. What concerned Hitler and Aristotle was not something which concerned Korzybski. Each represents a difference in total orientation. If for you it is more important to organize the thinking of your hearers to your 'modes of thought', then you will go to the former; if for you it is more important that statements are 'adequate', that they 'fit' what it is they are about, then you will go to Korzybski. Hitler-Aristotle would teach you how to use words skillfully for 'effect'—Korzybski would teach you how to use words carefully for their *fitness with facts*, for proper evaluation.

Hitler and Aristotle start with this question: How can we persuade others to 'think' as we do and to act as we would have them act? Korzybski starts with this question: How can I talk about the events of this world so that my talk evaluates them properly? In brief, I conceive the emphasis of the Hitler-Aristotle rhetoric to be on those speaker-audience relationships by means of which the audience becomes controlled by the speaker. The emphasis of the Korzybskian system as applied to rhetoric is on those relationships which exist between an utterance and the facts it is to represent. The one breeds a philosophy of power, the other a doctrine of adequate statement, and proper evaluation for both speaker and hearer.

²¹ *Ibid.*, p. 452.

²² Of course, the responses of the students might have been different had they known of the 'fact', or had they seen the young woman in a different setting. But the important point for our purposes is the realization that the setting or context affects the interpretation, and that in responding fixedly to the word, *prostitute*, the students were responding to a 'fiction', to an 'absolute meaning', to a symbol considered apart from the varied possible contexts in which it might be located.

²³ Walter N. Polakov, *Man and His Affairs* (Baltimore: Williams and Wilkins Co., 1925), p. 160.

A RECONSIDERATION OF THE TECHNIQUES OF CONTROVERSY IN TERMS OF THE FORMULATIONS OF GENERAL SEMANTICS

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This paper does not purport to question the devices of the advocates; they have been reviewed and criticized by other writers and numerous indictments have been made against them. It is conceivable that the research methods of the advocate, for instance, do not conform to approved methods of social and scientific inquiry. For example, the selection of topoi with which to support a thesis is frequently governed by the 'conviction' of the listener instead of by the nature and quantity of the topoi available.¹ It has also been charged that the advocate selects, evaluates, and discards his topoi in accord with his sympathy for the abstraction he wishes to dogmatize; and it might be shown that the most widely practiced principles of argument and persuasion proceed upon the somewhat naïve assumption that there is an eternal and unchangeable finality from which the arguments of the advocate are derived. It has been charged that the advocate sometimes forgets, or never knows, that the dogma of another day becomes the controversy of today. Likewise it might be shown that the special devices of refutation obtain their power from the same premises which occasion their existence. The Law of Identity, for instance, works overtime to permit the operation of the 'method of residues'.²

And still further, this paper does not purport to evaluate the techniques of controversy. In what proportions and in what order eloquence, platform appearance, arrangement, invention, etc., induce belief is not our present consideration. Later studies may reveal that a technique of controversy—a belief-making device—employs more of the one and less of the other. In this paper we simply recognize that certain procedures are used to induce belief and/or to influence behavior. In this paper we are not concerned with these matters; we propose to devote our attention to only a consideration of the principles which appear to underlie the techniques of controversy.³

Let us look, in the first instance, at the nature of 'proof'.⁴ While it may be many things, catalogued in ingenious ways and sedulously protected and bulwarked, *proof* is a satisfaction of the 'mind'; it is an easing of the tensions created by the complexities of the problem. The method of 'proof' is the minimizing of the known possibilities that a given conclusion is false.⁵ If I were to attempt to prove this premise by tra-

¹ See Boris B. Bogoslovsky, *The Technique of Controversy* (New York: Harcourt, Brace and Co., 1928), pp. 72 ff.

² 'Whatever may be the efficacy of this method, it is, as we long ago remarked, not a method of pure observation and experiment; it concludes, not from a comparison of an instance with the result of a previous deduction.' John Stuart Mill, *A System of Logic, Ratiocinative and Inductive* (New York: Harper and Brothers, 1867), p. 554.

³ We use the term *techniques of controversy* to refer to those principles by which the advocate seeks to modify the belief and/or behavior of the judges.

⁴ F. C. S. Schiller, *Must Philosophers Disagree* (London: Macmillan and Co., Ltd., 1934), p. 329.

⁵ 'So often does our psychologic certainty prevent us from even entering on the pursuit of truth, that it is well to reflect that the *feeling* of certainty is often nothing but our inability to conceive the opposite of what we happen to believe.' Morris R. Cohen, *Reason and Nature* (New York: Harcourt, Brace and Co., 1931), p. 83.

ditional methods I might resort to *explanation* to destroy your objections; I might employ some form of 'emotional' appeal; I might resort to formal logic; I might, as debaters have been known to do, invite you to 'prove' that the premise is not true.

Let us consider each of these methods in turn. For the moment, the *special methods* of refutation will be ignored. *Explanation*, as it is understood, seeks to induce convictions by explicating objections or by removing misunderstandings.⁶ *Explanation* has its source in either (1) the necessity for repairing false-to-fact language or (2) in establishing the correct-to-fact nature of the language used. In the process of repairing false-to-fact language, the advocate is concerned with only those phases of his language which are adjudged false-to-fact by the listener. He succeeds in securing conviction when the listener no longer realizes that there are false-to-fact statements in the 'proof' of which he is unaware.⁷ In the process of establishing the correct-to-fact nature of language, the advocate proceeds only as far as the listener's objections. In other words, the advocate assumes that he has 'proved' his premise when the objections of his listeners and/or their misunderstandings are removed.⁸ Perhaps one example will make the foregoing passage more 'meaningful'. If an advocate says, 'The earth is flat,' his listener may raise an objection. 'But I saw a ship disappear on the horizon,' he may say. The technique of *explanation* is then called to the aid of the advocate. He replies: 'Oh, it is just getting smaller in the distance.' Now if the listener can raise no further objections, conviction is secured and 'proof' is established. It might be pointed out here that, as far as practical purposes are concerned, 'proof' is measured by the critical capacity of the listener, and seldom, perhaps never, by the nature of the events talked about. *Explanation*, in other words, as a technique of controversy, seems to be unreliable because it is guided by the critical capacity of the listener instead of the conformity of language to the events which the language represents.

Sometimes, the advocate does not even resort to *explanation* in his attempt to secure conviction. He may introduce topoi which tend to induce the listener to react 'emotionally'; he may encourage the listener to wish to disbelieve his own objections. He may say, for instance: 'If you don't believe the world is round, you won't go to heaven.' The *motivation* provided here for the listener to discredit his own objections to the premise is a type of support of argument which is commonly used by advocates. While it is recognized as a specious form of reasoning, it carries with it no tests for its use or non-use. To what extent motivation of this type is present in reasoned discourse no one can say. A little reflection on its prevalence, however, may lead one to conclude that it is present in all belief-making situations and is part of all techniques of controversy. The *signal reactions* of his auditors which permit the advocate to employ this type of motivation occur because of a lack of 'thalamo-cortical integration' and the want of training in extensionalization.⁹ It is sufficient for our purposes, at

⁶ Similar reasoning would show the uselessness of the so-called "method of exhaustion", in which the proof of a proposition consists in successively denying the opposites. There is little hope of any single individual ever exhausting the possibilities of the universe unless they are first limited by some conceptual means.' Homer H. Dubs, *Rational Induction* (Chicago: The University of Chicago Press, 1930), p. 143.

⁷ Mortimer J. Adler, 'Traits of Controversy,' *Dialectic* (New York: Harcourt, Brace and Co., 1927), Ch. II, pp. 26 ff.

⁸ Morris R. Cohen, *op. cit.*, p. 106.

⁹ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941), p. 157.

present, however, to indicate that at least this one technique of controversy is based on the misuse of language: the tendency for signal reactions to words without ameliorating delay of reaction for re-evaluation.¹⁰ It can be seen upon reviewing our formulation of 'proof' that it is possible to modify belief and induce conviction (for the listener to discredit his own objections) and that signal reactions to words which are false-to-fact can encourage this process.

The next method which the advocate might use in the 'proof' of his premise is called 'logic';¹¹ its misuse is less discussed but is about as apparent as its use.¹² It has been stated that if a series of singulars manifest a relationship, either of causation or of classification, that this relationship obtains in all singulars of the phenomenon, and this is the technique which the advocate uses most frequently. He calls it 'inductive proof' and to it we must now give some consideration.

It might be well to begin by asking a question about the nature of conviction. When, for instance, does the inevitability of an abstraction wait upon you? Isn't it when the presumptions in favor of the abstraction tend to discountenance the presumptions opposing the abstraction? We call this process of piling up singulars 'induction' because it is supposed to induct us into an appreciation of the relationship of the singulars to each other. There are numerous laws governing the use of generalization and under which, theoretically, the induction must operate. However, all the rules for the controlling of the method of induction rest upon one assumption which must invalidate induction as an inevitable form of 'proof'. That assumption is the *identity* of the singulars. It is admitted that there can be no induction unless there can be established an *identity* of singulars in at least one respect.¹³ Now in certain physical matters it may be possible to approach a consideration of a *reasonable* number of singulars, or to be sure that *typical* singulars are employed, or to account for *negative* singulars, etc., but in the discourse of the advocate these limiting tests are difficult to administer.

For example, in exactly what respect are 'sharecroppers' alike? Or 'South American countries'? Or democracies'? Yet each of us has heard many generalizations which obviously must be based on an assumption of *identity*. And the assumption of *identity* is invariably false-to-fact.¹⁴

Now, to be sure, it is not possible to insist on the same limitations in the persuasive speech of the advocate as in the generalizations of the scientist; but it is possible to point out that the advocate ought to be aware of the process of abstracting, of the

¹⁰ An excellent discussion of this point appears in Chapters XII and XIII of *Language in Action* by S. I. Hayakawa (Second experimental ed.; Chicago: Institute of General Semantics, 1940).

¹¹ 'The logical process appears then to be identical with the *perceptual* reality itself, operated solely by means of the imagination instead of actually.' Eugenio Rignano, *The Psychology of Reasoning* (New York: Harcourt, Brace and Co., 1927), p. 83.

¹² See Morris R. Cohen and Ernest Nagel, *An Introduction to Logic and Scientific Method* (New York: Harcourt, Brace and Co., 1934), p. 9.

¹³ 'In other terms, reasoning made through a general or abstract concept is valid for all the objects or phenomena which, though very different one from another from a concrete point of view, have in common, nevertheless, the attribute or quality which renders them equivalent in relation to the end which should be reached by the operations or experiments which the reasoning imagines as performed upon them.' Eugenio Rignano, *op. cit.*, p. 117.

¹⁴ See Alfred Korzybski, *op. cit.*, pp. 379 ff.

'all-ness' nature of his generalization; aware of himself, including his neuro-semantic and neuro-linguistic environment.¹⁵ Where the advocate is aware of these limitations he may be less pernicious as an advocate and more useful as a citizen. The problem, however, is most acute when the advocate deliberately chooses to employ the harmful devices in order to advance his case. The solution here is the training of the listener in *extensional* methods. He, in order to protect himself, must be aware of the techniques at the disposal of the advocate; he must fortify himself with evaluational procedures which counteract the malicious influence of those who seek to convince him against his best interests. On the psycho-logical and evaluational basis he must learn not to identify his judgment about events with actual events. He must learn that the facts themselves are on an un-speakable or silent level.¹⁶

Likewise, in *analogical reasoning*, the advocate presumes upon the 'Law of Identity' to establish the relationships which give to an analogy 'probative' force. He assumes that he can establish that two singulars are alike in at least one essential respect; this assumption can not be proved. He makes the same mistake in the case of the *cumulative analogy*. Cumulative analogy secures its so-called 'probative' force by a piling up of analogical situations and concluding that the accumulation renders the argument valid. The advocate here again is seeking to satisfy the critical capacity of the listener and is not at all, or infrequently, concerned with the events as they actually are. The 'conviction' of the listener rather than an accurate delineation of events, is the goal in this type of reasoning. Of course, it is possible, that the advocate may 'feel' that his *argument* does conform with the facts; in this case his attempt to attain conviction by using analogical short cuts may be harmless; but, if the advocate wishes to use it, he has at his disposal an instrument which may be pernicious in its influence. It is true, as we all know, that *analogical reasoning* has been responsible for many great discoveries; but it is equally true that many of the great mistakes which have burdened the human race for hundreds of years have also been the result of *analogical reasoning*.

Reference has been made to the *method of residues*, which is one of Mill's five principles of induction. Now while the *method of residues* is based on the characteristics of induction about which we have been speaking—identity of singulars and the inducing of a general law—the usefulness of the method is apparent. Unfortunately, the method as a method of predicting probability rests, as do the other principles of argument, on the critical capacity of the listener and not on the nature of the events themselves. This is to say that the *method of residues* theoretically should not be employed until 'all' the possible causes of a given phenomenon have been enumerated; but most advocates are willing to use the method when only a 'reasonable' number of the causes for the phenomenon are apparent. Actually, the *method of residues*, the *method of agreement*, the *method of difference*, the *joint method*, and the *method of concomitant*

¹⁵ 'But attitudes involve lower order abstractions, "emotions", affective components, and other potent semantic factors which we have usually disregarded when dealing with science and with scientific problems and method.' Alfred Korzybski, *ibid.*, p. 184.

¹⁶ 'The term *un-speakable* expresses exactly that which we have up to now practically disregarded; namely, that an object or feeling, say, our toothache, is *not* verbal, is *not* words. Whatever we may say will not be the objective level, which remains fundamentally un-speakable.' Alfred Korzybski, *ibid.*, p. 34.

variations are very useful methods of concluding 'with considerable certainty' about a great variety of phenomena.¹⁷ If the advocate were to limit himself to using the methods in the sense that they originated, and the sense that the student of logic uses them, he would not be as greatly in error as he frequently is. When the advocate finds conviction his goal, he is careless of method and its conformity to events.

It must be pointed out again, in this connection, that many of the errors of the advocate are not so much due to the method as to more deep-seated language difficulties; these difficulties have been pointed out recently by students of general semantics. The advocate is engaged, in each of the methods of reasoning, in a process of definition. When the terms are used without due appreciation of their $\frac{\text{over}}{\text{under}}$ defined character and when they are elementalistic or multiordinal terms, the possibility of their accurate usage is markedly reduced. How many advocates use a workable reasoning device, and yet invalidate their conclusions by specious definition? Or by $\frac{\text{over}}{\text{under}}$ defined terms? Or by undated or unindexed terms?¹⁸

In general semantics, as in science, verbal definitions are not as helpful as an empirically tested predictability. If the predicted events occur, they may indicate a maximum predictability. If they do not occur, mis-evaluation is indicated. Because the techniques of the advocates as herein discussed reveal a necessary dependence on verbal definition, they can not conform to some of the essential principles of general semantics. It is apparent that the safeguards erected to ensure accuracy in the traditional methods of the advocate are largely verbal definitions.¹⁹ This attempt to find, in the words themselves, a source of accuracy is not an attempt to evaluate adequately fact relationships.

When I invite you to 'prove' that my *proof* is not minimizing the known possibilities that a given conclusion is false, I am engaged in what is called *the fallacy of ad ignorantium*. Merely because you can not prove that it is not so, does not make it correct. Now, all this proceeds elementalistically and on verbal levels.²⁰ The fallacy is recognized by the advocates because it violates the definitions which are necessary for approved procedures in argument. This fallacy, in fact most fallacies, can thus be seen to operate on verbal levels and to require necessary checks on the 'reasoning' process built up on the verbal levels. If the language adequately represented the events, there could be no distortion which would permit fallacies. Errors in predictability would occur, not because of definition, but because of too few data and/or the inadequate interpretation of data.

Perhaps all this will be clearer if a few references are made to what the advocate calls *deduction*. *Deduction* is, traditionally, the only form of reasoning by which the reasoner can be sure of his conclusion.²¹ Begin with a certain premise, observe certain

¹⁷ John Stuart Mill, *op. cit.*, p. 251. Cf. 1867 edition, p. 550 ff.

¹⁸ Alfred Korzybski, *op. cit.*, pp. xxviii ff., also Ch. II.

¹⁹ 'Hence the criterion of the truth or falsity of the meaning, of the adequacy, of the cognitional thing lies within the relationships of the situation and not without . . . truth *per se* and *in se*, of which all transitory things and events—that is all experience realities—are only shadowy futile approximations.' John Dewey, *The Influence of Darwin on Philosophy* (New York: Henry Holt and Co., 1910), pp. 107, 111.

²⁰ Alfred Korzybski, *op. cit.*, pp. 30-31.

²¹ F. C. S. Schiller, *op. cit.*, p. 45.

rules and, the conclusion is inescapable.²² Now since the syllogism, the form of deduction, proceeds on three general assumptions it is necessary to know these assumptions. Here is one form of the so-called laws of thought: If anything is A it is A; nothing can be both A and not A; anything must be either A or not A.²³

Since general semantics denies the extensional validity of these basic assumptions, it is apparent that general semantics can not use the syllogism as a method of predictability. As a matter of interest, the power of the syllogism may never have been as great as its defenders have thought it was. Since the days of Mill the syllogism has been attacked as defective in form and as not being universally acceptable. It has been discarded again and again only to reappear in the next text on logic. However, since it is a concatenated chain in which the later propositions are drawn from the earlier propositions, the deduced propositions only attain agreement as the premises attain agreement. Since it is, as we have pointed out, extremely difficult to obtain a set of indisputable premises the syllogism is correspondingly ineffective as an instrument of revealing knowledge. An apodeictic proof can of itself say nothing of the validity of its conclusions; it can only say that the conclusions are necessary, provided the premises and rule of their combination are accepted. Now all this has been familiar for some time to logicians; the weaknesses of the syllogism are well known. The general semanticist, however, not only denies the premises of the syllogism, but he points out that multiordinal terms, $\frac{\text{over}}{\text{under}}$ defined character of terms, etc., may invalidate the links in the chain even if the premises were accepted.

In recapitulation of these criticisms of the techniques of controversy, as they are employed by the advocate, we wish to outline three general indictments:

1. The advocate allows the critical capacity of the listener to be the measure of his 'proof' and only infrequently investigates the nature of 'events'.
2. 'Logical methods' can of themselves say nothing of the validity, adequacy, etc., of their conclusions and are frequently employed as means to false consequences.
3. Even if the premises of the advocate were granted, the misuse of language as pointed out in general semantics tends to invalidate their conclusions.

The principles of general semantics offer a possible resolution of these indictments; they furnish a possible basis for a reconsideration of the problem of the advocate in human affairs. It is recognized that the problem of the advocate is not a simple one and that the present state of language distortion prevents an early rehabilitation of the society which permits the advocate to employ deceptive procedures of which the members of society are unaware. Until the principles of general semantics are widely understood and practiced, as safeguards for the advocate and as protection for the judges, advocacy may very well be considered anti-social unless the advocate can demonstrate that he anticipates an 'improved' society. Unless the advocate can demonstrate a 'frame of reference' envisioning a society in which the individual possesses greater opportunity and more abundant goods, his advocacy is pernicious and inimical to public welfare.

²² H. H. Dubs, *op. cit.*, p. 143.

²³ For a criticism from other than the point of view of the general semanticist, see: Morris R. Cohen and Ernest Nagel, *op. cit.*, p. 183.

GENERAL SEMANTICS AND RHETORICAL STYLE

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(ABSTRACT)

In this paper, consideration is given to those affective aspects of language behavior which aristotelian rhetoricians have emphasized under the general headings of *arrangement* and *tropes*. As types of arrangement, the author discusses the balanced sentence; antithesis, as seen in dilemma, enthymeme, paradox and epigram, and in contrast as evidenced in epanorthosis, irony, interrogation and climax; inversion; repetition; and amplification. The discussion of tropes is elaborated by consideration of metaphor, personification, simile, synecdoche, metonymy and allusion. The author concludes by saying, 'This paper has emphasized the fact that literary style depends on affective devices; that in so doing there is grave danger of sacrificing informative "denotation" in an effort to secure affective "connotation". It is important that those using a language be aware of the tendency to categorize, and thus depart from the "process-facts", in their effort to become "literary", or to influence people.'

VERBALIZATIONS IN FINANCE

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We live today in at least two symbolic 'worlds'—the 'world' of words and the 'world' of money. Those who rule these worlds of symbols rule us. There is no escape from this. Alfred Korzybski states:

The affairs of man are conducted by our own, man-made rules and according to man-made theories. Man's achievements rest upon the use of symbols. For this reason we must consider ourselves as a symbolic, semantic class of life, and those who rule the symbols rule us. Now, the term 'symbol' applies to a variety of things, words and money included. A piece of money, called a dollar or a pound, has very little value if the other fellow refuses to take it; so we see that money must be considered as a symbol of human agreement, as well as deeds to property, stocks, bonds, etc. The *reality* behind the money-symbol is doctrinal, 'mental' and one of the most precious characteristics of mankind. But it must be used properly; that is with the proper understanding of its structure and ways of functioning. It constitutes a grave danger when misused.¹

This warning is even more pertinent today than when it was given in 1933. As civilization sustains the impact and shock of total war and accelerated technological change, the proper understanding of the money symbols and their proper use are imperative if much that mankind holds precious is to survive.

In our present private, national, and international situations we arm ourselves against the most ruthless of aggressors. We appropriate billions of dollars for defense and for war. As we know the need for these appropriations, we do not begrudge them, yet at the same time our fears of 'national debt', 'bankruptcy', 'crushing taxation' make us dimly aware of our very little understanding of the 'realities' behind the money symbols and of our confused evaluations in the world of finance. So it becomes essential for the preservation of our way of life and even our sanity that we revise our evaluations and learn to correctly use these money symbols.

For aid in making these new evaluations there seems to be little use in turning to the high priests of finance and their apologists, the orthodox economists. Confusion reverberates within the temple of finance. The Temple of Finance has become the Tower of Babel. Outside the portals of the temple, the masters of the word-symbols—the politicians, lawyers, and advertising men, etc.—manipulate symbols to fit their own ends. Often these ends are at cross-purposes with the goals of the masters of the money symbols. The masses are the victims of both.

Scarcely a financial term is used which is not confusing and which has similarity of structure with that which the term is used to represent. 'Credit', 'debt', 'bankruptcy', 'inflation', 'budget', 'gold', 'money', 'purchasing power', etc., arouse signal reactions and block 'thought'.

¹ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941), pp. 76-77.

Let us take some of these terms that daily fill the prints and air waves, some of the verbalizations mouthed by financiers and advertising men, and evaluate what it is that they represent as time-space events. *Debt* and *credit* will do to begin with. These two terms represent different aspects of the same processes. Debt and credit can only be split verbally. Financial debt is financial credit upside down. Financial credit is the reverse aspect of financial debt.

But do the masses of the people understand this? Assuredly not. Scarcely an individual exists in our society who has not had some unpleasant experience with 'debt' and responds with some unpleasant reactions to the word. Scarcely an individual exists in our society who is not proud of his ability to get financial credit and who will not use his 'credit'.

How does this happen? For almost twenty-four hours a day the public is ballyhooed to 'use its credit'. 'Jones gives credit' . . . 'buy your new clothes on credit', 'your hospital operation', 'your funeral on time', 'one dollar down and only fifty cents a week, and a year to pay', etc. This from the Tower of Babel. But from the temple of Mammon the bankers exhort us to 'save', and back all manner of drives to induce the school children to save their pennies. 'The people must again exercise thrift; children must be taught to save.' This was the theme of an address before a bankers' convention not long ago on the Pacific Coast. Mark this, from bankers whose major business it is to merchandise debts. It is not to be wondered at that thousands of our citizens buy more gadgets than they can easily pay for. It is not to be wondered at that upon time-payments leech-like finance companies flourish, accompanied by harvests of foreclosures, bankruptcies and suicides. *Debt* is a 'bad' word; *credit* is a 'good' word, and the recognition that the two symbols stand for the one and the same 'reality' is lost in the shouts from the market place.

Money, of course, is a multiordinal term. The reality behind it is to be found in agreement. Let the bankers and the economists define it. Their definitions embrace such notions as 'storehouse of wealth', 'measure of value', 'means of deferred consumption', 'medium of exchange' and the pontifical declaration of a Pierpont Morgan that 'money is gold and nothing else.'²

These first four 'definitions' have no similarity of structure or function with material coin or paper bill. To most people these notions have little extensional content. The last 'definition' illustrates the treachery of the little word *is* leading to identification and mis-evaluation. It represents a limited two-valued orientation toward money which, in reality, is multiordinal and whose main characteristic, as Korzybski has pointed out, is agreement. As further illustration of the multiordinality of this word, and the difficulties which result from improper evaluation of it, consider the dictum of the biblical moralist, 'The love of money is the root of all evil.' Is the Christian, therefore, to eschew all money and accept the evils of poverty? Many have done so.

For those of us who have a feeling for the functional and time-binding characteristics of the money symbol, its evaluation as 'anything which will be accepted for the liquidation of debts or for the exchange of goods and services' approaches closer

² J. Pierpont Morgan, Testimony before Sub-committee on Banking and Currency on *Financial and Monetary Conditions in the United States* (Washington, D. C.: Government Printing Office, 1913), Part XV, p. 1081.

to a 'reality' for us than any 'definition' of its material characteristics. It is interesting to note that one of the greatest living writers on the subject, Maynard Keynes, refuses to define it, but in seven hundred pages of hair-splittings and verbalizations constructs what he calls a treatise on money.³

Another aspect of our great difficulties with the monetary symbols is our failure to understand the workings of the manipulators of these symbols, the bankers and financiers. It seems to be 'a dark secret' that the monetary symbols are issued by government mints and printing presses only in a minor amount. It is not realized that the monetary symbols of agreement may be such abstractions as figures in the books of banks. Little marks of ink on white paper constitute the most of our money. The bulk of our spending power is released by the transfer of figures from one set of bank books to another.

Cheque book money is now the all important factor in our financial system. This cheque book money arises from bank deposits that are created primarily by bank loans. Were all the bank loans paid there would be no 'money' in existence under our system. The failure of the public to distinguish between the money symbol coined at the mint or printed on a press and the higher abstraction of bank credit has resulted in a long train of panics, depressions, social disorders which have threatened to undermine the foundations of our society. In the early thirties almost twenty billion dollars in these symbols vanished when the bankers and the borrowers failed to agree upon the validity of the bank-book symbol. And yet the public still thinks of money as bits of paper or metal.

What has happened? We have passed from the use of lower order abstraction 'token money' to a higher order, 'bank credit', but have failed to evaluate the change. We misunderstand the 'reality' behind the symbol. No wonder the bankers cried aloud for 'confidence' in their symbolism. The bankers were right in that we had lost 'confidence'. The essential 'agreement' in the money symbol had vanished.

They who identify the word with the 'thing-in-itself' will not believe that bankers create the monetary symbols with the scratch of a pen, although some of the great bankers of the world admit it. The masses wish to believe that money is something hard that can be seen and felt and which is permanent though the sky fall. The most characteristic financial factor of the last depression was a reflection of our doctrinal disagreement over money symbols.

It might be interesting to sketch briefly the history of our money symbol from the time that two-way barter (a space transaction) gave way to transactions in space-time through the use of a monetary symbol. Gold, because of certain physical characteristics, became the most popular time-binding symbol of commerce at an early period of commercialism. But gold proved heavy and cumbersome, theft was too easy, and for safety's sake, the owners of gold placed their metal in the vaults of the early goldsmiths for safekeeping, and took the goldsmith's receipts for it. Increases in commerce and business transactions resulted in a spiral of higher and higher abstractions and forced the circulations of the goldsmith's receipts as money, while the gold remained in the vaults. As still further abstractions arose when the first goldsmiths issued receipts

³ John Maynard Keynes, *A Treatise on Money* (New York: Harcourt, Brace and Co., 1930).

of their own against the gold which they did not own, or even possess, bank credit came to birth. We passed from gold ingots measured by weight, to token coins bearing the imprint of the State, to further abstraction of mere figures marked in an accountant's book.

Within this world of monetary symbols, human survival values are to be found in the recognition of the symbolic character of money and the multiordinal values behind these symbols. Perhaps the proper evaluation of this symbol is made easier by the notion of money as a *ticket*, as suggested by Major C. H. Douglas in *Social Credit*. We are not awed or neuro-semantically disturbed by tickets. There is no witchery in their production; there is no mystery in the printing. We know that tickets are worthless in themselves and as cheap as the paper and ink. This approach has already been made by the New Deal. Blue tickets, red tickets are issued to certain peoples on 'relief'. These tickets are claims to certain amounts of so-called 'surplus commodities'. This ticket device has been so successful that in Washington it has been proposed to extend it to all Americans whose money incomes fall below a fixed minimum. From those who object to 'all state charity' on 'moral grounds', the objections to the issuance of commodity tickets by the State have been far less vociferous than to other forms of 'relief'. It can only be supposed that the neuro-semantic disturbance brought about by giving a citizen a ticket good for a can of tomatoes is less than at giving him fifteen cents with which to buy a can.

Do you ask, 'What difference does this make?' One answer would be that at a time when it is reported that many young men are rejected for military service because of nutritional defects, the evaluations of money as tickets might make the difference between a Hitlerized and a democratic world.

Many, of course, are greatly disturbed at the thought that even if ticket-giving is *not* the same as money-giving, nevertheless these tickets must be eventually paid for out of taxes or must be charged against the 'national debt'. This last is the most horrendous. *National debt*—no term in the vocabulary of finance arouses more 'emotional' reaction than this. So intense are the signal reactions to this verbalization that only still greater neuro-semantic disturbances, aroused by the fear of Hitler, will permit this government to create new monies marked up on the books of the Federal Reserve Banks and the Treasury Department as 'national debt'. War, and only the fear of war, releases in the modern world the great streams of financial credit, because of this fear of 'national debt'.

In the public mind 'national debt' can only result in 'national bankruptcy' and complete collapse of all commerce and industry. How does this neuro-semantic disturbance at the words *national debt* and *national bankruptcy* arise? And what do these terms 'mean' if, indeed, they have any 'meaning'? Fear-arousing propaganda, originating with the masters of money who fear the loss of their control of these symbols should the State exercise its constitutional prerogative to create new money, has had a tremendous effect upon the 'minds' of the masses.

The individual, recalling the painful experiences he has had or observed with *individual debt* and *bankruptcy*, carries over these same feelings to the terms *national debt* and *national bankruptcy*. But the term *debt* is a word symbol and is not all-inclusive. 'National debt' is not the same as individual debt. The 'national debt' is

not the sum of the personal debts of Smith, Smith, Smith, etc. The 'national debt' does not arise from actions similar in structure to the actions that create the debt when you or I buy a car on time, or borrow a ten dollar bill from a friend. To clarify this, it is necessary to ask two questions concerning the 'national debt'. First, of what does the debt consist? Second, to whom is the debt owed? Examined from this viewpoint, the neuro-semantic disturbances should be allayed.

The national debt consists of symbols marked in books. The 'realities' behind these symbols are food, shelter, guns, etc. We do not borrow the energy to produce them. There is no energy expended that is to be paid back to someone, somewhere, sometime. We do not borrow the material to be used in their production. The monetary figures representing this debt are merely indices of a new outburst of creative energy by the American people along new channels. The nature of the transaction, which usually involves the National Treasury exchanging a bit of paper, engraved with figures and called a bond, with the Federal Reserve banks for the privilege of drawing cheques upon new figures in the bank's books, is purely a man-made device. The national debt can be examined only as figures in a book; malnutrition or the conquests of Hitler can be examined in and on the organisms of men and women.

The term *national bankruptcy* is also a financial verbalization, pointing to a book-keeping convention and not to an act or a process in nature. We can declare ourselves bankrupt nationally if and when we like and flagellate ourselves accordingly. But let us not forget that bankruptcy represents nothing outside of our own man-made rules and man-made conventions. In the world of space-time there is nothing to correspond to the word, *national bankruptcy* or *debt*. Today's flour cannot be ground with tomorrow's water power. National debt does not represent consumption of tomorrow's production. All production is actually paid for in energy and materials when it is produced. The *cost* of all production is what is consumed in the process. The financial costs are bookkeeping conventions supposed to properly map the physical facts.

Another verbalization with power to disturb neuro-semantically is the term that for years was seldom out of the financial columns of the daily press. I refer to that mouth-filling phrase—*balancing the budget*. We may grant that it is important that the individual spend less than he receive in monetary income. For the individual the balancing of his financial income and outgo is all-important. But the national budget, if there were one, would not be the same as the individual citizen's budget. The aristotelian two-valued orientation has been responsible for millions of words about the 'national budget', few of which make sense. The State, because of its power both to tax and to create the tokens of payment, need only consider whether or not the expenditure is advisable, whether or not the materials and the energy are available.

The national government does not have a budget in the orthodox accounting sense. This is evident when we consider that nowhere is there a set of double entry books that show government assets. What is socially owned is not recorded anywhere in a national set of books as an asset. Assets such as the Boulder Dam, the Golden Gate Bridge, etc., are recorded only as financial debt. How can a non-existent budget be balanced? How can a non-existent set of books be kept? Never was there a more 'meaningless' term, a more frothy bit of financial verbiage than the term *balance the budget*. Those masters of the monetary symbols who use this term for propaganda

purposes would be the first to oppose the setting up of an actual 'national budget'.

Hitler will bankrupt Germany in a few months, we were told by the medicine men of finance when the Austrian ex-paper-hanger began his rearmament of Germany in 1934. How much of the complacency with which the British Government, the financial-minded English rulers, viewed the activities of Hitler in the early thirties was due to this verbalization? Doubtless Hitler did his best to spread this notion of the coming bankruptcy of Germany among his potential victims. Tens of thousands of Europeans have died, perhaps tens of thousands more will die because of the paralyzing effects upon the British minds of the financial verbalization *German bankruptcy*. Economists and financiers predicted the first World War could not last three months because all the belligerents would be 'bankrupt'. The journals of that time are filled with these predictions.

Our safety today and our happiness tomorrow depend upon an understanding of the *reality* that lies behind the monetary symbols and the proper use of these monetary symbols. In acquiring this understanding, the map-territory analogy which has proved so valuable in general semantics has use in evaluating the world of money symbols. The financial system is nothing more or less than a map of production, consumption, and exchange in the world of space-time events. This map purports to adequately represent the relationship between these events. The transactions of finance are as varied and continuous as the series of events of our economic life. They essentially serve as a time-binding function. By and with the symbols of finance, liquidations of past commitments and new commitments for the future are recorded. Finance produces nothing; creates no wealth or new values, although the manipulators of these financial symbols are able to lay claim to a tremendous share of the world's wealth through a combination of legalistic devices and monetary manipulations.

But unhappily the financial map is misleading. It shows places that do not exist, and relationships that have no structural similarity with the territory mapped. 'Finance' can show the United States, and did show it, as miserably poor and bankrupt, while the land possessed a tremendous store of raw materials and energy and a people willing to produce and desirous to consume. 'But where is the money to come from?' went up as a cry from the market place. Where are the symbols to come from? Where do any symbols come from? One-third of our people must exist at a standard far below the minimum of decent existence in one of the richest countries on earth, because there is no money. Such is the paralyzing effect of the mis-evaluation of monetary symbols. The financial system which is the bookkeeping system of society attempts control of society's economic life. The bookkeeper from his stool is now ruling the factory. He will order the output to fit the symbols he cares to write in his book.

Today there is not a single term in the vocabulary of finance that does not need semantic investigation. A revised evaluation of monetary symbols and their proper uses might result in such profound changes, such far-reaching effects in the United States that it would be we who would usher in a genuine 'new world order'.

NOTES ON THE CONSTRUCTION OF CHAOS

AN EXTENSIONAL ANALYSIS OF JOURNALISM

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All known forms of democratic government can be destroyed from within by the consent or connivance of the governed. A prerequisite is the development of accordant, individual opinions which collectively make up the determining factor called 'public opinion'. And this development has now been simplified by an 'eminent Doctor of Laws' (Leipzig, 1941) who states: 'What we mean by the word "public opinion" depends only to the smallest extent on the individual's own experience or knowledge, and largely on an image, frequently created by a penetrating and persistent sort of so-called "enlightenment."' Moreover, he says, 'It is the press above all else that carries out this "work of enlightenment", thus forming a sort of school for adults.'¹

Such a facilitating notion, coming from a man whose own life was oddly affected by newspapers, who read from other sources mainly to reinforce the aberrations these newspapers helped to establish,² and whose works have profoundly disturbed many democratic governments throughout the world, is not to be passed over lightly. As a faculty member of the 'school for adults', I propose to give it considerable attention.

We are told that in Germany, where this notion has been put into action, 'the very air is saturated with the word *Schulung* ("schooling") and its derivatives, all representing a deliberate effort to mold the minds of growing youth in accordance with a set pattern' which, under examination, appears to be formulated functions of certain 'philosophical' doctrines lacking verifiable correspondence between most of their fundamental postulates and empirical findings.³

To propagate this dynamistic false 'knowledge' on adult levels at home, and to prepare the way for its consequences abroad, the press has been converted into 'a highly sensitive and far-sounding instrument', utilized in co-ordination with various social, political, economic, and military implements for the maintenance of 'totalitarianism', and the waging of 'total war'.⁴ In these activities its tactical employment is characterized by the publication of news reports and editorial opinions which may be factual or fanciful so long as they are consistent with the basic doctrines. Some call this printed matter *enlightenment*, others call it *propaganda*.

Here in the United States the guardians of the press 'still seem hypnotized by the conception of propaganda as a thing in itself, and do not see in true perspective its place in the strategy of total war.'⁵ Hence they counter propaganda operations with

¹ Adolf Hitler, *Mein Kampf* (New York: Reynal and Hitchcock, 1939), p. 108.

² *Ibid.*, pp. 28, 46-50, 54-55.

³ See George Frederick Kneller, *The Educational Philosophy of National Socialism* (New Haven: Yale University Press, 1941).

⁴ Otto D. Tolischus, *They Wanted War* (New York: Reynal and Hitchcock, 1940), pp. 97-108.

⁵ Edmond Taylor, *Strategy of Terror* (Boston: Houghton Mifflin, 1940), p. 203.

argument and a kind of literary criticism based on the assumption that propaganda is a form of verbal acrobatics, or persuasion by debate.

Actually, it 'persuades' by compulsion. Those who are 'persuaded' do not succumb to 'logical reasoning'; they are victims of calculated psycho-physiological attacks directed against their nervous systems.

The background for this type of compulsive education is found in the field of neuro-psychology where it has become generally accepted that when nervous impulses follow a certain neural 'pathway' as a result of a given stimulus, subsequent impulses tend to follow that 'pathway' upon repetition of a similar stimulus; and if a second but dissimilar stimulus be combined with the first, after several trials the second stimulus alone will produce responses similar to those produced by the first. This, roughly, is the principle of conditionality of reactions observed by Pavlov in his experiments with animals.⁶

Elaborating Pavlov's work, and formulating the findings in a language applicable to the human level, Korzybski has shown that human nervous systems respond not only to non-verbal stimuli, which bring immediate demonstrable harm or benefit, but also to words as psycho-logical semantic stimuli. These produce conditioned reactions of different degrees, progressing in order of conditionality from more or less fixed, animalistic responses (signal reactions), pathological for man, to variable, flexible, human responses (symbol reactions), sane and proper for man.⁷

Confirming Korzybski's formulations and observations, empirical evidence obtained by pupils of Pavlov has established the fact that words are 'the best of all conditional excitants', and can be used deliberately to evoke signal reactions, of low degree conditionality.⁸

From a survival point of view, a reaction adequate in one situation may not be so in another; similar direct stimulations under different circumstances should naturally result in responses appropriate to the welfare of the organism. If, however, attainment of such high degree conditionality is rendered impossible and human beings are instead trained in signal reactions, the prevailing circumstances make little difference, and so permit a large measure of control on the part of those who apply the stimuli. Indeed, as Chakotin has shown, this consideration seems to have been well studied by the totalitarian propaganda experts.⁹

Perhaps it accounts for the curious fact, observed by Professor Herring, that 'Life in this country is markedly different from that in totalitarian states. Yet the latter have secured greater mass experiences of opinion and probably a higher percentage of agreement than democratic countries have ever witnessed.'¹⁰

Since, also,

the structure and function of the central nervous system is such that some stimu-

⁶ I. P. Pavlov, *Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex*, trans. and ed. G. V. Anrep (London: Oxford University Press, 1927).

⁷ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941), pp. 315-365.

⁸ Serge Chakotin, *The Rape of the Masses: The Psychology of Totalitarian Political Propaganda*, trans. by E. W. Dickes (New York: Alliance Book Corp., 1940), p. 33.

⁹ *Ibid.*

¹⁰ Pendleton Herring, *The Politics of Democracy* (New York: W. W. Norton and Co., Inc., 1940), p. 313.

lations can be concealed and become macroscopically seemingly inactive, giving no obvious manifestation or response, yet preserving their active exciting characteristics which, by proper treatment, can be released at will . . .¹¹

totalitarian propaganda treatments may also account for 'certain bizarre phenomena of democratic disintegration, and of conversion to fascism' such as that reported by De Rougemont, who wrote in amazement:

I saw the population of the Saar throw itself into Hitler's arms in 1935. I saw *sozial-demokrat* Vienna transformed in twenty-four hours into Vienna delirious with Hitlerian passion. I saw France, or let us say rather certain Frenchman, discover inside a few weeks the 'good points' of the totalitarian system.¹²

There may even be a warning of tremendous significance to our own leaders in this recital. At least, to the newspapermen of the United States there is an implicit warning which certainly should not be ignored:

We deal not only with semantic, linguistic, and logical issues on the verbal levels, but also with neuro-semantic, neuro-linguistic, and psycho-logical mechanisms of the human nervous system whenever we publish anything.

Already the totalitarian propagandists, through the spread of false-to-fact doctrines and various techniques of verbal distortion,¹³ are taking advantage of the above facts by *training* the nervous systems of the masses in reactions known to be inimical to the survival of our form of government.

It is a matter of deep concern that in our 'open society'—to use Bergson's appropriate phrase—the stimuli concocted by these propagandists are today being applied through the channels of our own news services to defenseless citizens of the United States.¹⁴

Without some means of solving the semantogenic problems arising from this 'penetrating and persistent sort of so-called "enlightenment"', the deploring of our predicament is not likely to provide a defense; nor will any amount of clever cataloguing under the labels *name-calling*, *band wagon*, or whatnot remedy the damage. Yet, at the present date, efforts to combat this continuing assault are confined—in so far as most newspapers are concerned—to just such exercises, together with the previously mentioned argumentation, the refutation of detected falsifications, and editorial exhortations to 'avoid emotional reactions'.

The lies, of course, are produced more rapidly than they can be refuted.¹⁵ The inadequacy of argument, debate, etc., in view of the neuro-semantic, psycho-logical factors involved, should be apparent from what has here been said. And the attempts to separate 'emotional' reactions from 'intellectual' reactions are, of necessity, futile.¹⁶

A matter of far deeper concern, about which still less has been done, cannot be

¹¹ Alfred Korzybski, *op. cit.*, p. 360.

¹² Denis De Rougemont, 'On the Devil and Politics,' *Christianity and Crisis*, I (June 2, 1941), 4.

¹³ Edith Roper and Clara Leiser, *Skeleton of Justice* (New York: E. P. Dutton and Co., 1941), p. 37.

¹⁴ Carl Joachim Friedrich, 'The Poison In Our System,' *The Atlantic Monthly*, CLXVII (June, 1941), p. 663.

¹⁵ See 'Our Papers Print, Willy-Nilly, What Nazis Want Printed,' by Lowell L. Leake, in the New York newspaper, *PM*, issue of Sunday, April 27, 1941, p. 19.

¹⁶ S. I. Hayakawa, 'General Semantics and Propaganda,' *Public Opinion Quarterly*, April, 1939, pp. 197-209.

dismissed if we note the intrinsic similarities between domestic journalistic performances and the well planned procedures of foreign experts who are purposely using the press to train the masses in reactions known to be inimical to the survival of our form of government.

Primitive intensional neuro-linguistic and neuro-semantic 'canalizations' and consequent responses are imposed upon the majority of readers by our own quite ordinary journalistic practices and higher conditionality of semantic reactions is rendered impossible. So we observe widespread, compulsive, semi-automatic types of reactions. Those who buy forty million newspapers each day are aware of such types of reaction only in terms of personal anxieties, feelings of insecurity, helplessness, bitterness, and the sense of being caught in a vortex of events which they are not only unable to understand, but unable to control even though their personal lives are most intimately and drastically affected. Their greatly over-stimulated and misused nervous systems, if they do not break down, are blocked in making appropriate adjustments to the rapidly changing complexities of modern life, and ultimately these difficulties bring about conditions of docility, passivity, and stolidity in the body politic.¹⁷ The present extensive manifestations—often referred to, in discussions of the the world crisis, as 'America's apathy'—illustrate it well. What it will mean in terms of death, destruction, and degradation, only history can show.

As a malignant case in point, we can cite a Middle-Western newspaper (which, in the interest of accuracy and upon the advice of legal counsel, I will designate as anything but the world's greatest newspaper). In news-story and editorial form, this paper provides the student of general semantics with sufficient examples of identifications, objectification, description by inferential terms, confusions of orders of abstraction, two-valued orientation, etc., for an exhaustive study, from the psychiatric point of view, of neuro-semantic transference of pathological projections through the public prints.

But let us consider, in lieu of pursuing the point, that at the other end of the scale there are no newspapers which may be classed as semantically safe. This, today, carries serious implications for the future. Under the threat to our democratic form of government which lies within the problem, it is imperative that the press of the United States take immediate steps to eliminate the semantically harmful practices for which it is responsible. If this is not done by voluntary action, it should be made obligatory by law. The question of freedom of the press need not be raised in the premises since legal history shows that freedom of the press is a right, subject to restraint by the legitimate exercise of powers vested in Congress, and to regulation by the States in preservation of the health, safety, and welfare of the people.¹⁸

To my knowledge, only one metropolitan newspaper of large circulation, the *Daily News* in Los Angeles, California, has recognized the problem and begun to approach it with the methodology of general semantics. I now earnestly recommend that all newspapers follow its example lest our world be re-created in the 'image' of Adolf Hitler.

¹⁷ Cf. I. Pavlov, *Lectures on Conditioned Reflexes*, trans. by W. H. Gantt (New York: International Publishers, 1928), Ch. XXX, 'Hypnosis in Animals,' pp. 294-295.

¹⁸ Consult Willis, 'Freedom of Speech and the Press' (1929), 4 Ind. L. J. 445; *Stromberg v. California*, 283 U. S. 359, 368 (1931); *Gitlow v. New York*, 268 U. S. 652, 667 (1925).

SOME PRACTICAL APPLICATIONS OF GENERAL SEMANTICS TO JOURNALISM

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In a world 'hopelessly dynamic', journalism, which in 1941 remains the most potent influence on public opinion, must do its work with language, which is 'hopelessly static'.

Handling the changes in the swift world of process with words is a colossal task in itself; besides, it is complicated by the innumerable factors involved in human behavior.

If the main purpose of journalism is to adjust Smith₁, Smith₂, Smith₃, etc., to the 'facts' of 'reality', then apparently it should be a science (or at least subject to scientific rigor). Since it depends in practical application upon persons representing various degrees of psychosomatic integration, it should involve factors of sanity. On the whole, it should be one of the principal places where science and sanity meet. But there is little of science and still less of sanity in modern journalism.

The world as it is today is a medal on the breast of Mr. Hearst, or, if you please, a wreath on the gravestone of Mr. Bonfils. Mr. Bonfils, when he edited the *Denver Post*, said a dog fight on Champa Street was more important than a war in Europe, a statement which was not only a smart-aleck concession to an ignorant reading public, but proof that Mr. Bonfils was in business to profit by their lack of world feeling and understanding.

As Korzybski says in his seminars, the man in the street may not have heard of Aristotle, but his head's full of the aristotelian system. Following the lines of least resistance, our great Press has coddled these habits of evaluation and so extended them, that Aristotle is 'in' more solidly than ever. The indirect but final results include insanity, delinquency, war, etc., and 'the general deterioration of human values'.

Obviously, non-aristotelian orientations in journalism, based on an honest application of extensional discipline taught by Korzybski, would have a far-reaching effect upon the quality of our journalism and the 'semantic reactions' it produces in readers. The whole kit and kaboodle of 'old notions' which rule the roost today are headed for the ashcan if we can only learn to use our neuro-linguistic and neuro-semantic mechanisms properly: this applies to the men and women who produce newspapers and to people whose education depends largely upon newspaper reading.

It's an uphill task, steep, breath-takingly difficult. Many journalists just do not understand the structure of language in relation to the structure of the world and its use on various levels of abstraction. Others do not want to understand, because their papers serve special interests and their job is not to 'drag people down to earth' (the 'facts', etc.), but to keep them up on some precarious limb. This is easily done with words. The bewildered public is so full of intensional definitions, superstitions, signal reactions, etc., that a few well-chosen phrases can start a war or a pogrom quicker than a semantics student can say 'electro-colloidal configuration'.

In our town, Chicago, we have an almost perfect example of aristotelian journal-

ism. The *Chicago Tribune* calls itself the 'World's Greatest Newspaper' and has over a million circulation, chiefly because it had no competition in the morning field, and also carries 'Orphan Annie', 'Smilin' Jack', and 'Terry and the Pirates'.

No matter why you buy a *Tribune* in Chicago, you are exposed every morning to the wildest imaginable examples of identification, absolutism, etc., and non-similarity of structure between language and facts—all tending to create conflict, hatred, and a morbid disintegration of community morale. I cite the *Tribune* as an example of the kind of journalism we have perpetuated in America by aristotelian inertia, and also to show what we are up against in Chicago.

For the past eight years, the main pre-occupation of the editors of the *Chicago Tribune* has been the journo-political assassination of Franklin D. Roosevelt. In the elections of 1936 and 1940 their campaign against F.D.R. was waged primarily through distortion of news concerning national policy. Since the Defense [July, 1941] and the Aid-to-Britain program, the *Tribune's* anti-Roosevelt nihilism has taken the course of extreme isolation and a crusade for so-called 'peace', by definition. To the obvious delight of Hitler and his propagandists, the *Tribune* prints in Chicago practically the same thing Goebbels and his henchmen say in Berlin. There have been some classic coincidences in the expression of Nazi and *Chicago Tribune* opinion.

In the *Tribune*, the President and Mrs. Roosevelt are pictured as lovers of royalty. Their sons are pictured as ne'er-do-wells looking for easy pickin's. The 'I Wanna Be A Captain' slogan developed by political morons to embarrass the President was played up ad nauseam 'to the nines' in the *Tribune*. The President himself, if one is to believe the news stories and editorials in the *Tribune*, is a Jekyll and Hyde combination of easy-mark, crafty perpetrator of frauds, alien conspirator, foolish idealist, and blood-thirsty war-monger.

Because the Roosevelt administration developed the present national policy of relief for the unemployed, the *Tribune* has always played up evidences of relief fraud, with the obvious hope that its readers, steeped in 'allness', will identify all with one and conclude that 'All relievers are crooks.' To discredit the WPA, the *Tribune*, in cartoon and news story, has characterized the WPA as wasteful and corrupt, hoping that the public is not conscious of the process of abstracting and will identify the isolated examples, some of which were false, with the whole WPA program.

When appropriations for the Office of Government Reports were approved by Congress some time ago, the *Tribune* ran a headline and story that Roosevelt's 'American Gestapo' had been approved.

The price of milk was raised a penny a quart in the Chicago area. The increase was due chiefly to higher wages for drivers and a price-boost for farmers, but the *Tribune* played up in its headlines the dubious assertion that the Aid-to-Britain campaign was partly responsible. This newspaper's notion, obviously, was that mothers who bought milk for their babies would cuss Roosevelt's foreign policy.

On July 4, there was a debate in Buffalo between Senator Claude Pepper and Senator Burton K. Wheeler. Wheeler, anti-Roosevelt isolationist, was given the headline in the *Tribune* and twenty-five inches of space, while Pepper, who spoke for the Administration's foreign policy, was given exactly four column inches.

Statistics of apportionment of space do not tell the whole story of the partisan-

ship of this newspaper. Numerous tricks are employed which would take a separate volume to enumerate and analyze. Such a book should be written as a monument to what a modern newspaper should *not* be. As Hitler was the exponent of ruthless blitz in warfare, so the *Tribune* expounds it in journalism.

But the *Tribune* is not alone. Columnists like Westbrook Pegler, papers like those owned by Hearst, magazines like the *Saturday Evening Post* [at that date], etc., have as their stock in trade easy familiar generalizations, subject-predicate methods, identifications, and complete disregard of the consciousness of abstracting together with the multiplicity of factors and the interdependence of living in 1941.

Living is mostly presented to the reader as a table d'hôte existence. His choices are limited to the 'either-or' evaluations, Nazism vs. Communism, Republican vs. Democrat, haves vs. have-nots, intervention vs. isolation, labor vs. capital, North vs. South, East vs. West, etc. Asymmetrical relationships are ignored. It is remarkable that more newspaper readers are not locked up in insane asylums! The high speed printing-press, instead of helping us to solve our problems, has only increased the volume of verbalistic confusion. The printing press is a great technological improvement and ought to be a boon to humanity. It seems to me that this is where general semantics comes in. Wherever an editor has the general semantics orientations, his objective must necessarily be the publication of a newspaper that furnishes an adequate map of the territory; that is, of the facts seemingly most necessary for proper evaluation.

This is more easily said than done, but I believe that training in Korzybski's system, the use and demonstration of his devices—indexes, dates, the etc., quotes, and hyphens—which simplify understanding of the relating of language to facts and the increased publication in newspapers of thalamic examples in news stories, graphs, charts, and pictures will at least make those who produce newspapers more *conscious* of their responsibilities, and tend to create greater effectiveness in their work.

Making the reader fact-conscious instead of singing him *Tribune*-like lullabies of omission and fractional truth, would be an important contribution toward socio-political sanity. As guide and counsellor to the masses, an editor can help a reader adjust himself to his community environment, develop his social feeling, and rid himself of generalized hates and fears. This can be done with editorials, thalamic examples, direct personal contact with community groups and leaders, by interpretative news stories developing areas of mutual interest even among so-called enemies, and by trying to make the public understand that life is not a limited table d'hôte, but indefinitely à la carte.

Let me say now that in trying to apply general semantics to the operation of my newspaper, I do not consider that I am doing anything sensationally new or different. Every student of journalism is taught the so-called fundamentals and canons of the profession in the conventional schools. What I have said in this paper so far does not differ greatly in principle (although it may in terminology and implication) with what any group of intelligent people who never heard of general semantics might agree upon as problems in journalism.

What Korzybski gives us is a methodology.* Our 'ideas' and morals as verbalized

*General semantics, the *modus operandi* of the non-aristotelian system formulated in *Science and Sanity* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

may have been fairly healthy, but our practices have been sick. We need a practical system for carrying out our verbalizations of good intentions. I have found the system of Korzybski workable and teachable.

At our staff meetings I emphasize the extensional devices and the structure of language. Jones₁ is a 'single, separate person', distinct from Jones₂. Jones₁¹⁰²¹ is not Jones₁¹⁹⁴¹. Jones₁ beating his wife is not Jones₁ playing golf. Jones₂ playing pinochle is not Jones₂ beating his income tax. There are *similarities* and there are also *differences*. We talk about them at our meetings, and the reporters and copy-readers develop a sounder perspective toward the news. We are more tolerant, too, because the indexes and dates increase our respect for the environmental and neurological, electro-colloidal factors which catapult certain unhappy individuals into the news columns.

Two non-aristotelian principles, results of the examination of the structure of language-fact relations, I find most important in practical journalism:

1. A word is *not* what is spoken about.
2. A word does *not* cover *all* the characteristics of a thing, relation, etc.

The horrible journalistic crimes of *all-ness* and *is-ness*, wherein a reporter writes and an editor passes the statement that so-and-so is a crook, or that this-and-that is *all* bad can be avoided by consciousness of these two premises.

My assistants now can recognize a story of a generalized or editorial 'nature'. When they abstract, they are at least conscious of it. I have a hard-boiled assistant who hands back a story and yells 'it ain't thalamic' or 'the Boss wants a semantic story, not a frantic one.' We have invented 'Mrs. Schmidt on Melrose Street', a 'typical' reader, and we ask, 'can Mrs. Schmidt understand it?'

Most reporters try to draw positive conclusions from their investigations. My reporters tell what they see and hear. One girl accompanied a group which went to see the President of the Board of Education about a new school. The reporter untrained in general semantics would look for a phrase or word upon which to build an absolute promise or absolute denial. Our headline was 'He Didn't Say Yes and He Didn't Say No.' The story told how the President of the Board of Education exhibited pictures of his grandchildren and how he warned one lady not to sit on a hot radiator.

On another occasion one of our reporters covered a neighborhood debate between the William Allen White Committee and the 'Keep Out of Foreign Wars' Committee. Representing the latter was an up-to-then respected war veteran, active in civic affairs. But on that occasion, he said Roosevelt was 'worse than Hitler' and that he hoped the Nazis would push the English into the sea. Our reporter described exactly what she heard and saw. The story shocked the whole city and was widely quoted and even reprinted in other newspapers.

On the practical application of general semantics to our editorials, let me read you some: From the *Lincoln-Belmont Booster*, August 21, 1940, editorial titled 'The Maginot Mind':

What really beat France was the *Maginot mind*. This is a term invented by Count Alfred Korzybski, the noted word scientist, who is now teaching [General] Semantics in Chicago. A Maginot mind is a mind that is immovable, like a fort. It has inflexible convictions which cannot be shaken. It hides behind its Maginot line and believes that no matter what happens the line will keep its owner protected.

From an editorial entitled 'The Young Smiths and Joneses,' December 21, 1940:
You can't put your finger on Youth as you can on a barber pole or a bowling ball. Youth is made up of millions of little Smiths and Joneses, all infinitely different in mental and physical constitution and all profoundly influenced by complex environmental factors.

From the editorial 'No Time for Smugness,' December 18, 1940:

These countries (France and England), could have saved a lot of 'progress' that 'civilization' had made up to the start of this new war if they had been lean-headed instead of fat-headed. The first thing they should have realized is that in the new world you can't really be happy unless your neighbor is happy, for this is the basis of correct social thinking.

From 'A Coat of Paint vs. a Striped Necktie,' February 26, 1941:

I would rather see a fresh coat of paint on every building in Lake View, than the much sought-after traction merger. I would rather see the streets and alleys of Chicago made safe and clean than super-highways; I would rather see a few more decent houses in our neck of the woods than a neon-lighted subway under State Street.

From 'How to Hate,' March 12, 1941:

The hater strikes me as a pretty funny animal.

He hates that which he doesn't understand, and because he understands so little, he hates a lot.

He says the thing he hates is a this or a that, and he stops right there, implying that the thing he hates is only what he says it is, all that he says it is, and nothing else but what he says it is.

He rejects the multiplicity of life and the numberless variations in the human personality.

He worships the twin devils—*is*-ness and *all*-ness. He says a thing is bad, so he hates, minding his *is*-ness more than his business and showing his smallness with *all*-ness.

For example, he hates Negroes. He says the Negro is dirty. He doesn't want to sit next to the Negro on the street car. Does he know the Negro? Was he present the last time the Negro took a bath? What kind of soap did the Negro use? How thoroughly did the Negro scrub his neck? Our hater should know all this exactly. His knowledge ought to be as correct and thorough as his hate.

Another hater hates Catholics. Every time he gets a chance, he sounds off on what the Catholics *are* and what *all* of them stand for. The fact that there are millions of Catholics of hundreds of nationalities and that as human beings there are no two of them exactly alike doesn't bother the hater. Twenty years ago he had a run-in with a Catholic street car conductor and you can't tell him about Catholics. No sir, don't bother him with arguments. He's busy hating 20 million Americans.

In the field of direct personal contact, members of my staff and I are doing what we can to encourage sane, effective tone and to take advantage of our comprehension of the dynamics of our time. Journalism is not use of paper and ink alone. The words and action of an editor off the editorial page are as important as on. I deny the usefulness of those schizophrenic writing robots who divide their work from themselves.

As a speaker and lecturer, and in personal and professional relations, I have turned to the consistent use of the extensional devices and terminology of general semantics as a means of helping my audience to understand what Irving J. Lee might call my *moral purpose*. Early in June, for example, speaking to the Chicago Conference on Association Publicity, I read them the outline of this entire paper as a thalamic example of the kind of work we do on our paper.

Speaking to children seven to twelve years of age at the YMCA on 'Old-fashioned Ideas and Superstitions' I tried Korzybski's simple pedagogic device of asking the class questions relating to the subject:

'Is it true that if you walk under a ladder you will have bad luck?' They all cried, 'No,' in unison.

'Is it true that all college professors are Communists?' 'No!'

'Is it true that nobody loves a fat man?' 'No!'

'Is it true that the Government feeding hungry people is un-American?' 'No!'

'This pencil, is it a word or a thing?' 'A thing!'

'Can the word write?' 'No.'

'Could we write with the thing even if we called it something else?' 'Yes.'

At neighborhood commencements, school meetings, community council gatherings, and Boy Scout socials we have told and recorded in our newspaper the simple story of interdependence, need for integration in our community life, and the importance of brushing away the old cobwebs of intensional definitons, superstitions, etc.

In personal relations we have had some outstanding successes. In our neighborhood we had a notorious anti-semite, who believed the strange, mixed-up Hitleristic picture of the Jew as international capitalist, war monger, and schemer. I took this man through the various Jewish quarters of Chicago. I showed him stores, slums, and synagogues. We talked to the people, saw the way they lived. When we returned home after a whole day, during which I did not attempt to propagandize him verbally, he said: 'The Jews are just like all other people. Rich and poor. Good and bad. Mixed up and troubled.' I think he was cured of his verbal generalizations by a thalamic experience on the non-verbal level.

In another instance I caused a Republican, who therefore had believed the *Tribune*, to be placed on the North Side Citizens Relief Committee. He learned for himself the problems of the underprivileged and unemployed and became one of our most effective helpers in raising the relief standards in Chicago.

Even in our correspondence we apply general semantics. A recent letter reads:

Dear Madam: We have your letter offering us an astrology column. It is the policy of our newspaper to avoid all material of an unscientific nature. In these troubled times we do not want to confuse our readers any more than they are already confused by the facts. We are interested in the maximum predictability in the news based on an analysis of facts, not fiction. When and if astrology becomes a recognized science, please get in touch with us. Yours truly.

My keenest interest today is in the field of 'scientific humanism' à la Reiser. 'Relativity,' says Reiser, 'applies not only on the physical level, but on the human level. A field-organism treatment applies to *man* in *society* no less than *particles* in a *field*.'

I have seen some astounding results. There is, for example, a keen rivalry between 'downtown' and the neighborhoods in Chicago. Downtown has begun a subway, which the neighborhoods resent. The groups have kept apart and the misunderstandings have grown. Nobody has tried the organism-as-a-whole-in-an-environment theory. Realizing that the differences are not irreconcilable, I accompanied the loop moguls on a trip through their new subway, and discussed with them the needs and problems of the neighborhoods. Some of them heard the story of the need for re-planning Chicago as a whole for the first time. My story of the first trip through the subway showed sympathy for the loop without compromising the position of the neighborhoods. This won high praise from both sides, and was, perhaps, the beginning of a new era of co-operation.

In our office we are on the alert, in copy or conversation, for the oversimplified inferential word or phrase which is designed to consign persons, groups, and 'ideas' to damnation without a review of the facts. The epithet *un-American* for instance, loosely used for propaganda purposes, is never permitted to pass without challenge. We are glad to say we have caused many a cancellation of the appellation by making the user conscious of the mechanism. We do not do this for its own sake, but for the underlying reason of preventing further misunderstanding and conflict.

The examples of the practical application in my own experience of the principles and devices of general semantics to journalism are necessarily fragmentary. An awareness of the essential importance of extensionalization is fundamental. This may be the foundation of a new journalism—dynamic, factual, integrating—an antidote for propaganda poison and hand-me down aristotelianism.

'Man's greatest mission,' says Reiser, 'is now to salvage the pageant of history from the dark domain of the futile and insane, to snatch the human panorama from the frustration of the meaningless.'

NEWSPAPERS, EDUCATION AND GENERAL SEMANTICS

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(ABSTRACT)

Newspapers remain the most powerful influence in modern life as the educational force affecting adults. Recent Gallup poll showing 78 percent of those questioned believed defense strikes were caused by 'Communist elements' is cited as an instance of this, since newspapers largely indicated such causes by direct statements or innuendos, creating popular belief in an unverified evaluation of the situation. Some newspapers naturally do not merit this criticism.

Competition on a commercial scale among newspapers forces most to adopt methods that do not aid in the semantic adjustment of people. Prejudices of operators are evident in the handling of news on controversial questions, helping to confuse rather than clarify understanding. Headline writing is an influence, and often an emphasis in the 'wrong' places is employed to create this effect.

Comics are no longer humorous, and often harmful in their effects. But in many instances popular demand continues them. Advertising may or may not be a 'correct map of the territory'. The modern trend toward the use of pictures in newspapers reduces rather than enhances the chance to render adequate news coverage, because for one reason, pictures take up too much space to allow adequate wordage to accompany them, and for another, pictures represent only an 'instant' in the happening represented.

Editorial writers and columnists often base their writings upon 'maps' that do not picture the existent 'territory', and introduce extraneous material, much too often as an aid in obscuring the 'real' issues.

The only solution suggested as practical and practicable is speeding up the education of a semantically adjusted reader-public that would automatically demand newspapers of the caliber necessary to give adequate news stories and editorial evaluation of them.

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PERSONAL APPLICATIONS OF GENERAL SEMANTICS IN THE MOTION-PICTURE BUSINESS

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By its very nature, this paper will be teeming with high order abstractions—'generalizations' if you please—which will not bear too careful scrutiny. Most of the statements I intend to make should be divided by two, further reduced by approximately twenty-five percent, fumigated, taken with a grain of sodium chloride and swallowed with suspicion.

* * * * *

The American motion picture business, as I have known it for the past fifteen years, could be described as 'hectic'. We might list other similar, applicable adjectives: 'frenzied', 'crazy', 'hysterical', 'nerve-wracking', 'tough', 'exhausting', 'heart-breaking', 'man-killing', etc. The popular notion of the motion picture industry as a dreamy paradise where handsome people are paid exorbitant salaries for having a wonderful time is as far from the 'truth' (according to my lights) as Iceland from Singapore.

Many of the persons 'successfully' engaged in the motion picture business are pretty unhappy most of the time. They worry themselves over the same type of problems as do lawyers, doctors, farmers, undertakers, etc. In addition to the myriad insecurities torturing most human beings today, those of us in the motion picture industry have our own particular set of miseries.

It would take more time than I have at my disposal to detail this set of miseries. But here are some of them: too much publicity, so that the petty, silly, personal episodes of our lives are constantly being exposed to the public gaze; the idiotic legend that we are all very rich—which makes us perfect victims for many varieties of racketeer; a very brief professional career as compared to that of other professions; for instance, a lawyer of fifty is a young man while a motion picture executive of the same age is 'an old wreck'.

Very few persons work the long hours under the same degree of high tension—'pressure'—as we do in the motion picture business. The competition for jobs is ruthless, mistakes are costly and bitterly resented and, in general, the law of the jungle prevails. The rate of acceleration *going down* is very high indeed! Helping hands, numerically, are much fewer than kicks in the seat of the pants, when once you start down. I realize that our industry has no monopoly on this pattern of behavior.

Another one of our fundamental difficulties is that there seem to be no valid criteria, no workable 'rules' for settling disputes in most of our problems. If a couple of engineers disagree about a technical problem, they can build a small model and soon determine which one of them is 'crazy'. Doctors can try it 'on the dog' or the monkey or the guinea pig. Lawyers can try it on the judge. We have no such advantages.

Let us assume that we are working on a story. How shall a certain delicate situation be handled? The two writers and the producer cannot agree. There are three

separate and mutually exclusive opinions. A fourth person is brought in as referee. He agrees with none of the three original disputants but proposes a fourth solution coinciding with his particular orientation toward life and the structure of his particular nervous system. The confusion increases.

We cannot build a model or apply any workable test. It is prohibitively expensive and impractical to make four versions of the same motion picture to try on a preview audience. And so we just sit around and yammer, trying to convince one another. The loudest and longest yammerer usually wins the argument. All of us would be greatly obliged for some quick, easy, non-verbal test whereby we could determine exactly how an average audience (whatever in heaven that may be!) will react to a given situation.

Just in passing, I have heard that a studio made the experiment of employing psychologists to help solve some of the difficulties mentioned above. The results were far from flattering to the psychologists involved. The structure of the maps drawn by them was so far from the structure of the territories involved that the predictability was nil!

This welter of words attempts to give you the feeling of the hot, frantic, bitter, affectively-toned disputes that frequently accompany the making of a motion picture. No one really agrees with anyone else from the day the story is conceived until the day (often several years later) when the completed motion picture is shipped to the theaters. Most persons engaged in this business suffer from what I term 'battlefield nerves'. The men curse and the women weep. Both sexes grow luxuriant crops of stomach ulcers. In fact, in our business the stomach ulcer is practically an occupational disease.

It does not take a great deal of imagination to realize that any technique of adjustment or readjustment which enables the individual to make his thalamic region 'pipe down'—which enables him to stop sweating at the palms, stop smoking cigarettes in an endless chain and stop having a minor apoplectic stroke whenever anyone disagrees with him—is of immense value in the atmosphere often prevailing around motion picture studios.

Under these circumstances, the techniques of Korzybski's general semantics have not only value but genuine survival value. By aid of them, one becomes something akin to Gene Tunney in the ring at the height of his prowess: a calm, controlled organism conserving all its force for the blow when and where the blow will be most effective. This, I quite realize, is not the prettiest picture in the world and probably does not square with the *Saturday Evening Post* 'concept' of the genial American business man. However, I assume that this paper is intended for adults not wedded to the notion of living in a delusional world. And so, I repeat that if the study of general semantics can, among other benefits too numerous to mention, help one to fight coolly, calmly, effectively without foolishly dissipating his strength, it has survival value important enough in 1941 to be discussed at university faculty meetings—or even at Rotary Club luncheons.

I sincerely believe that the work I have put in studying general semantics has paid 'good dividends'—to use language that most of us have been conditioned to understand and respect. I further believe that, only by the use of the techniques of general semantics, will some decency and order be restored to a world which, undoubtedly,

has taken such a beating during the SECOND AMERICAN CONGRESS ON GENERAL SEMANTICS that it can stand no more abuse from me!

My humble apologies for the flippant tone of most of this paper. But much of my alleged 'humor' consists of whistling in the dark and attempts to avoid the customary jeremiads. All of us, I believe, are faced with desperate trouble. Only the strong, the calm, the canny—and more probably, the lucky—are going to survive. After the smoke of battle has cleared away, the methods of general semantics will come into their own—I do hope.

HORTICULTURE AS A FIELD FOR INVESTIGATION OF SEMANTIC REACTIONS

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It is with the greatest hesitation that I accept the invitation of my friend Alfred Korzybski to contribute to the program of this Congress at Denver. I recognize that my knowledge of the subject of general semantics is too fragmentary and too superficial to permit me to say much that will be of use in spreading the non-aristotelian system which forms the basis of the discussions at the meetings.

I recognize that perhaps I am in a rather unusual situation here in Florida; I see certain semantic difficulties here in connection with horticulture which might not be so apparent were I living in the northern latitudes and surrounded by plants with which I was familiar from my youth. Here I find myself in the midst of species which have been brought in from all over the tropical world. Many of them do not even have their names printed in Professor Bailey's Encyclopedia of Horticulture. Not only are the species new to America, but the people who have come here to live are new to the region. They know little or nothing about tropical plants, but they either want to know or feel they ought at least to know their names.

This creates a situation different from that in northern horticulture. Here the species which the residents want to know the names of are not what they would term just insignificant, wild, nondescript plants. They cannot overlook such plants easily without anyone's knowing they are ignorant of what botanists call them. These are species which produce fruits excellent to eat and make preserves of, or to plant for their shade or for their fragrant flowers in our door yards.

The people here have come down into a new world so to say and they are a bit bewildered by the new symbolism with which they find themselves surrounded. Some of these people insist on learning the names of the new plants, others shrug their shoulders and say, 'How can anyone learn such names anyhow? It's no use trying!' Still others devise 'common' names for the species they take a fancy to and let it go at that. Of course the vast majority immerse themselves in their houses with the toys they have been familiar with, and amuse themselves as usual. There is a small percentage of curious-minded people in the world anyhow—curious in the sense of wishing to know what plants are named and where they come from.

It is this situation that has made me conscious that perhaps in horticulture there is a field for semantic investigation which might yield positive results, as they say. I am too ignorant of what has been done to state that I believe such an investigation would reveal something of great value, but I have a notion it might. If I may be allowed, I shall write quite freely and informally my impressions without, I hope, being required to prove my statements which may not be easily proven. First of all I would claim that properly evaluated, the world of plants offers a field for human

activities which is much less 'emotional' in its character than the world of human beings or domestic animals. Allow me to illustrate this.

I have come down here to my little study in the early morning before my neighbors are up, thinking I would have the quiet hours in which to write this paper: a time free from any 'emotional' excitement. I see down the road a little dog coming along and I hear next door another dog yelp. (I happen to be a bit 'prejudiced' against dogs. I am ashamed of it, but I have not been able yet to cure myself of that prejudice.) So two signal reactions have broken the quiet of my thoughts. Now beside the road is a new large-leaved aroid which I brought back from the forests of the Philippines. It has leaves four feet across and I have built a shade for it to enable its leaves to spread and show their marvelous shape and color. I find one of these leaves is caught in the shading mat of bamboo. I have to get under it and with my hand gently pull it loose so that it will not be torn. I am so to say 'worried' about this pet plant, but my worries are not increased by its snapping at me or barking at me or whining or even weeping. It does not say 'thank you' when I release it although I can imagine it does feel grateful if I wish to go so far in my anthropomorphization of my beautiful new aroid. I have been spared, as regards the aroid itself, any signal reaction. Had I found one of the dogs digging a hole under it however, there would have been a decided signal reaction, the effects of which might have lasted for days and spread to its master, even lead to a disruption of our friendly relations for the rest of our lives.

This reaction would arise not in connection with the plant itself, but because of the ownership of it or of the dog which was destroying it. I do admit that when in my walks about the place I find a special plant languishing for some reason or other I am disturbed. Like everyone I am disposed to 'blame' someone, unless I delay my reactions by remembering the long chain of events which brought the plant to where it is now and the difficulty of fixing a cause for its troubles, much less placing the blame for them on anyone.

The disturbance over the behavior of a plant does raise a ripple of unpleasantness and worry, but I believe that this worry is a very mild one indeed compared to the excitement of a whole family for weeks over the death of a pet animal. The two worlds are different in regard to producing these signal reactions. If they were not, my place here with its hundreds of different species of plants would be about the most 'emotionally' disturbing place imaginable. Just consider what this quiet garden would be like were all of the plants in it able to move around and make noises. The ordinary zoological garden would be quiet in comparison, for I have thousands of individual plants and hundreds of distinct species.

But there is another angle here. This quiet world of plants is often ignored and I have wondered if this is not the reason why: Perhaps things that can move about have a greater importance, impress the human eye and senses, more than those which are fixed in their places. Visitors who come to see my plants occasionally bring along a dog. I have noticed often that a large part of their attention is fixed on the movements of the dog and so they see very little of the plants, even though they may be taken and shown them personally. I have observed also that when in a tropical forest there is no breeze evident and everything is quiet, a single small leaf that may be far up in the tree top will be instantly singled out by the eye if it moves or is

moved by a bird or animal. The other leaves of the dense forest make no impression—are a kind of a green blur, but that moving leaf rivets one's attention and takes on an importance even though it is only a tiny current of air that is moving it. Am I correct in assuming that this may explain why so many people may live in a garden all their lives without actually seeing the plants which compose it?

Now returning to this matter of the names of the plants and the memorizing of those names for purposes of conversation about them; here we at once enter a world which is not so peaceful. One of the boy visitors to the garden who tried to read some of the special legends which I had placed under the trees to inform people what they were, remarked, 'Why can't the fellow write it in English so that I can understand it?' Aye, there's the rub. Why can't he?

It requires many experiences here to teach people that there are no common names in English for hundreds of these plants and that were we to try to use those in the botany books of foreign lands, there would result a confusion which would be appalling. There would be any number of 'apples' with prefixes of the various countries where they came from. I have on my place what some people call Ceylon Gooseberries, Barbadoes Cherries, Jay-pan Apples, Custard Apples, Rose Apples, Java Plums, Brazilian Cherries, Surinam Cherries, Alligator Pears, and a host of others.

It has taken many years for the old residents here to realize that the best way is to learn the scientific names of the plants, difficult though some of them certainly are. They may gird at such names as *Syzigium* or *Antidesma*, or *Casimiroa* or *Arikuryroba*, and they generally curse the poor botanists who invented the jaw-breaking names. Generally they forget that all the time they must memorize the names of the new human acquaintances they are making. They complain because two scientific names are necessary and this has always amused me. Particularly when the complainant is a woman, I can remind them that during recent years women have insisted that their friends remember and use first names on a scale undreamed of in my childhood. I confess to a bewilderment when it comes to remembering the combination of women's names, or men's for that matter. I can recall the name of Hawkins, but unfortunately there are in the family Mary and Jane and Susan and Elizabeth and Carrie and if I mix up these names I am put down as an old doddering idiot or something as bad. I have to admit that I cannot master the names of the fifty-two cards in a deck of playing cards, much less the names of the indefinitely many combinations of cards which are involved in the plays. But why the card players should complain about memorizing the names of a few dozen plants has been a matter of wonderment to me.

Another difficulty which creeps into this quiet world of plants and brings about signal reactions is that connected with establishing their names, their symbols. If I want to raise a row among those who deal with the names of plants I have only to question the correctness of a certain name and so, the botanist who named it. The systematic botanist will bring out a book with the 'correct' name in it and under this will be a half page of names which have for good and sufficient reasons been discarded. It has taken two centuries for systematic botanists to get the names in even passable shape so that the 'identity' of almost any one of the half million plants can be determined. This has been a colossal work in the field of symbolism and it deserves

to be studied by the experts in general semantics, for there seems to be something peculiarly controversial in the field, and the play of signal reactions reaches a stage at times when personal antagonisms mount to a very high pitch of intensity. I may be criticized for saying that some of the controversies of systematists approach the bitterness of political orators. The international warfare over the principles which should guide botanists in the naming and classification of plants has not yet ceased. There are still adherents to the American Code as distinguished from the International Code.

I am too ignorant of the subject to offer any explanation of why the field of systematics in any science seems to be a field of special controversy. But I have a notion that perhaps in botany one reason lies in the fact that the word-descriptions of plants are very imperfect and that much of the misunderstanding comes about through the interpretation of those words (their ^{over}_{under}-defined character, etc.) which have to be used. It must be mentioned, however, that unlike the politicians the botanists have seen to it that somewhere, in some herbarium, there is carefully stored away an object, a dried specimen, which anyone can see and feel, with which the word description can be checked up. The 'map', so to say, is not merely one of words; it includes a thing, a non-verbal symbol on a lower level of abstraction. It should be admitted and is by the systematists that the dried specimen is a first order abstraction which leaves out many characteristics of individual growing plants and varies in value greatly, for example, with the size of the plant concerned. A whole plant of a violet can be dried and mounted on a sheet, but what about a hundred foot palm with leaves forty feet long? Adequate photographs have in recent years been added to these specimens to make a more perfect 'map'; bring the abstraction closer to the actuality.

But this problem of abstractions, of specimens, etc., does not cover the controversial field of classification. As soon as the process of generalization begins and the specimen is taken as a symbol of, let us say, a half a million individual plants in some out of the way part of the world there is ample room for honest differences of opinion between the man with the specimen and the other man who stands among the living plants themselves. Such controversies are of constant occurrence and may become very bitter.

I happen to be trying down here to get people interested in plants. And I shall welcome any assistance which can be given me to the end of minimizing these destructive and disturbing reactions because they tend to turn people away from what seems to me a vast quiet world, into which those half crazed by the insanity of the world of symbolism may enter. Here by feeling of the plants, smelling of them, admiring their colors and forms and even tasting them, people can work their way out into the extensional world of living facts and leave the intensional world of words and vague generalizations behind. Am I right in believing that sanity lies in this field of living things?

Years ago Mrs. Fairchild and I found lying on the ground under a large *Ficus* tree on the slopes of the Volcano Lawoe in central Java some red fruits. We picked them up and sent home seeds taken from them. Fifteen years have passed. The dried

specimen of those fruits still remains in a vial in the collection in Washington. The single living seed which was planted beside our terrace has grown into an immense tree fifty feet high and four feet through and two weddings have taken place under it. To me this example typifies the difference between the world of living organisms and the world of static symbols. Until mankind gets away from the present preoccupation with symbols, a slavish adherence I mean, any map of a reconstructed world, such as many people seem to think should be drawn now, can scarcely have much significance. The questions of population and birth control and food supply and human misunderstanding are problems connected with living organisms—from the single microscopic cell of their beginnings to the gigantic forest tree, or to the terrifically potent rabble rousers and racketeers and dictators who move multitudes with their clever use of symbols that have no extensional reality in a scientific sense.

When I tire of the talking of people I find sanity among the quiet of the plants.

THE MILITARY SCHOOL IN A DEMOCRACY FROM THE POINT OF VIEW OF GENERAL SEMANTICS

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(ABSTRACT)

Since efficient functioning of every organism—social or individual—is dependent upon order, and since order, especially in human beings and human society, is established chiefly by discipline, in every society there must be a constant emphasis upon discipline in the training of citizens. In a democracy, discipline from without is reduced to a minimum; therefore there must be a corresponding increase in the discipline from within—in other words, Discipline₁ is not Discipline₂.

Speaking schematically and very roughly, we human beings function on two levels: the 'thalamic' and the 'cortical'. Each level has its characteristic modes of reaction, reflex and delayed, respectively. Therefore, there must be a discipline for each level, adjusted to its characteristics.

The discipline seemingly best suited to the 'thalamic level' is primarily physiological—conditioned—reflex in nature. That best suited to the 'cortical level' seems to be predominantly psycho-logical—the scientific approach, going by maximum probability, stressing non-identity, non-allness, the expectancy of the unexpected, i.e. of a higher degree of conditionality of reaction.

My thesis is that a military-liberal arts college is potentially a good training ground for such a democratic disciplinary training. On the military side, the drilling on the parade ground, the rigid code of rewards and punishments, the stratification of the college society into military ranks, each with the prerogatives and responsibilities peculiar to it, the prescribed modes of speech, action, dress, each proper to its specific environment—all these disciplined 'reflex-activities' inculcate 'thalamic' ordering of reactions. On the liberal arts side, the training received in courses of languages, history, mathematics, physical and natural sciences is designed to foster the types of evaluating reactions I mentioned above as typical of the 'cortical level'.

A combination of these two types of training, especially when the neuro-linguistic and neuro-semantic issues are made clear to the students by teachers trained in general semantics, seems likely to provide an inner discipline making for the smooth working of the individual organism 'under its own steam'. Only under the leadership and with the co-operation of such individuals can government of, by, and for the people continue to exist in our time.

PART III

Some Neuro-Semantic and Neuro-Linguistic Factors In the Re-Construction of Education

Section A

EXPERIENCES IN DEVELOPING A UNIVERSITY COURSE IN GENERAL SEMANTICS

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In the fall of 1939 the writer was privileged to introduce a course entitled *General Semantics*, open to Juniors, Seniors and graduate students, in the departments of Psychology and Speech at the University of Iowa.¹ In terms of the manner in which it was developed, this course was related chiefly to the research and clinical work with stutterers and to the established programs in speech pathology and clinical psychology. Students majoring in seven different departments of the university enrolled for the course.² It is this fact which serves to indicate one of the more obvious of the problems in connection with the relation of general semantics to the academic situation.

The problem indicated by the fact that seven different university departments were represented by the twenty-three students registered for this first course in general semantics is the problem presented to the university administrators who must decide where general semantics belongs. This problem is much more serious than might be supposed. There is a strong tendency for large numbers of persons to react to general semantics mainly by attempting to classify it under some familiar heading. And when they have decided that general semantics 'is' psychology, or that it 'is' speech, or philosophy, or that it 'is' a branch of speech pathology, or psychiatry, or progressive education, they seem to act as if their tensions and curiosity about it had been largely relieved. One of the most noted educational leaders in the country recently remarked casually, 'General semantics is logic.' A few weeks ago one of the nation's leading speech educators even went so far as to say in all seriousness that he had found nothing in Alfred Korzybski's *Science and Sanity* that had not been fully covered by Aristotle!

It is, indeed, difficult to realize how all but overwhelming and significant is this almost universal tendency among us to pour new wine into old bottles. It constitutes, of course, an aspect of our traditional orientation to similarities, even supposed 'identities', rather than to *differences*. Our common disposition to assume that there is nothing new under the sun is symptomatic of a cultural tradition that tends to breed

¹This did not, however, constitute the first teaching of general semantics at the University of Iowa. In abridged and variously adapted forms general semantics had been presented in seminars and courses, during winter and summer terms, since February, 1937, under the titles of 'Language and Speech Disorders' and 'Speech Hygiene'. The writer was the instructor in these courses, and they, too, were offered in both the departments of Psychology and Speech. It appears that the 1939-40 course was the first offered under the name of General Semantics in any university, although Count Korzybski offered seminars in general semantics, in the summers of 1936 and 1937, at Northwestern University, for which academic credit was given.

The University of Iowa course resulted from the writer's discussions with Count Korzybski, attendance at his seminars, and study of his book, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

²In 1939-40, twenty-three students registered for the course, in 1940-41, twenty-seven students enrolled. In 1941-42, there were thirty-five students enrolled.

conservatism and to militate against the free play of curiosity and the vigorous exploitation of our capacities for change and progress. Within the restricted but culturally representative framework of academic curricula and administration, this predominating orientation tends to force whatever is new and different in general semantics into essential 'identity' with some already established department or discipline. As soon as a course in general semantics is proposed, the question is raised, quite automatically, as to the department in which it is to be offered. It practically never occurs to anyone to question the question itself—to examine the validity or the usefulness of attempting to classify general semantics in any of the established academic categories.

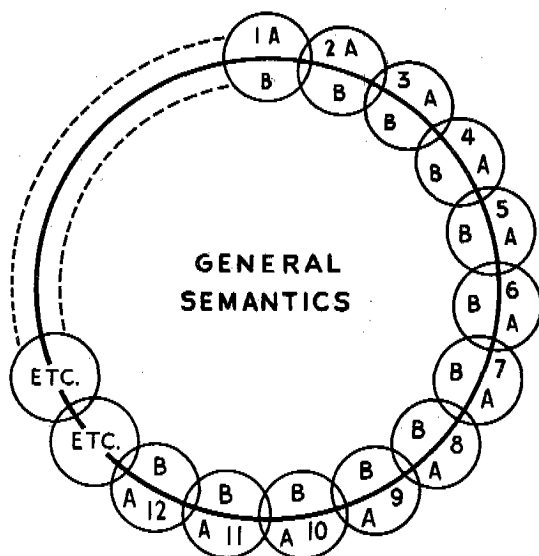
As a matter of fact, there appear to be no clear grounds for placing a course in general semantics in one department rather than another. Any university department is concerned with problems of subject matter and of teaching methods and objectives, toward the solution of which general semantics may be expected to make some contribution. It so happens that up to now general semantics has been put to use chiefly, it would appear, in connection with psychiatry, speech education, speech pathology, and the teaching of English. This fact, however, in no sense indicates that these particular areas are especially favorable, or that other areas are unsuitable, for the general semanticist. This is borne out by the reports which have come from widely scattered fields of specialization. These indicate that substantial beginnings have been made, in the use of general semantics, in general medicine, dentistry, remedial reading, art education, journalism, personnel management, dramatics, the teaching of physics (and of many other types of subject matter), propaganda analysis, radio broadcasting, business management, and basic research in problems of language behavior, speech disorders, personality, etc., and this list is not exhaustive. After all, general semantics deals with fundamental problems of symbolization and general orientation, and is therefore relevant to the work in any area where human relations are involved and some sort of symbolization is employed. That covers practically every area of *human* endeavor.

The relations of general semantics to other fields may be diagrammatically indicated in the following way (see figure next page):

As the accompanying diagram is intended to indicate, there is, to begin with, a 'field', or 'discipline', or 'area of specialization', to be labelled *general semantics* (there is such a thing as a general semanticist), and, as such, general semantics *is not* psychology, nor is it psychiatry, nor is it general education, nor is it any one of the other traditional areas or professions. It is simply general semantics. It is, however—because of the nature of the problems with which the general semanticist concerns himself, and because of the general method which he employs—integrally related to and a potentially basic part of practically any of the traditional fields.

Within the framework of academic administration, as it operates in most colleges and universities, there would appear to be at least four practical solutions to this general problem. The one which one might expect to be most widely adopted is that, already employed in many institutions, of not offering a course in general semantics, as such, but applying the principles and methods of general semantics in teaching any established course—or several courses. Hayakawa's work in the teaching of English and the work of Lee and Murray in the teaching of speech are examples of this general

policy.³ The work of Chisholm and his associates in the teaching of English from a general semantics point of view at Syracuse University is another notable case in point.⁴ President Brewer's efforts to re-orient the entire program at Olivet College in accordance with the principles of general semantics is an example of the application of this, not to a single course, but to a whole college curriculum.⁵ As actually carried out, this should prove to be a very effective way to teach English, or speech, or geog-



RELATION OF GENERAL SEMANTICS TO OTHER FIELDS

- A. Special problems, data, techniques, purposes, etc., of the area. These are of concern to the general semanticist because of their relation to:
 1. Law
 2. Medicine
 3. Engineering
 4. Agriculture
 5. Fine Arts
 6. General education
- B. Neuro-linguistic and Neuro-semantic aspects of the area.
 7. Religion
 8. Government
 9. Social Sciences
 10. Speech and Linguistics
 11. Daily Living
 12. Etc.

raphy, or psychology, etc., but it will not necessarily prove invariably to be an effective way to teach general semantics. Once a dean or a department head has decided that general semantics should be taught, there would seem to be no obvious argument against the offering of a course in general semantics, regarded not only as a special aspect of some already established field, and not only as a point of view from which various courses in the curriculum might be presented, but also as a subject in itself.

³See the following: S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace and Co., 1941); I. J. Lee, *Language Habits in Human Affairs* (New York: Harper and Brothers, 1941); Elwood Murray's paper in this volume.

⁴See Francis Chisholm, 'Application of General Semantics Methodology in College English Teaching,' in this volume.

⁵Joseph Brewer, *Education and the Modern World*, Olivet College Bulletin. Olivet, Michigan, 1937.

This, then, constitutes a second practical solution—that of adding to the curriculum, as has been done at Iowa, a course in general semantics, *per se*. Doing this does not preclude the possibility of teaching general semantics indirectly and incidentally in other courses; it should make such indirect and incidental teaching more probable. The question as to the particular department in which a course in general semantics is to be offered will usually be settled mainly on the basis of local conditions. At Iowa it was determined by the fact that the man who became interested enough to want to offer such a course was already on the staffs of the two departments of Speech and Psychology—and the heads of those departments were favorably disposed to having the course offered, as was also the Dean of the Graduate College. Similar considerations, practical rather than fundamental, would undoubtedly play a major part in determining administrative arrangements in any other institution. What is important is that once general semantics has been pigeon-holed in a particular department, it not be identified exclusively with the name of that department, and regarded as irrelevant to the problems of other departments.

Another solution, for which a substantial argument can be made, but which has not yet been attempted by anyone, is that of placing an introductory course in general semantics at the freshman level and making it a required course, or one of the alternative courses in a required unit. The department in which it would be offered would be of secondary importance, so long as there was some assurance that it would be made a part of the program of most students early in their college careers. The relation in which general semantics stands to practically every area represented in the college and university curriculum, in view of the fact that it is concerned with general methodology and orientation, argues strongly for such a policy.

Finally, there is a solution which we may not expect to see attempted for some time to come, but which will, in the writer's judgment, be adopted eventually by most institutions. That is the setting up of a separate department, or school, or institute of general semantics. This will sound fantastic only to those who regard general semantics as something that, at most, can be taught in one course. After all, there was a time, not a life-time ago, when there were no departments of psychology in our universities; 'psychology' was only a 'point of view', or a 'new fad', or an aspect of 'philosophy', or of physiology. Then, in time, came the deluge—and it developed that there was a 'psychology of' almost everything: of infancy, of childhood, of adolescence; of rats, of monkeys, of men; of races and nationalities; of art, of advertising, of education; a social 'psychology', an experimental, a clinical, an abnormal, a genetic, an educational, and an applied 'psychology'—and it developed that there was a history of 'psychology', and a 'psychology' of the various psychologists, of the *structuralists*, *functionalists*, *behaviorists*, *configurationists*, etc. If that could happen to psychology, what couldn't happen to general semantics! Indeed, the day may well come when there will not only be departments, but impressively large departments, of general semantics in the universities.

Of a less fundamental character, but of more apparent and immediate importance in the writer's own situation, were two other problems encountered in introducing general semantics into the curriculum. The one had to do with teaching materials, readings, etc. The other was a problem in what have come to be called 'public relations'.

The instructor of a course in general semantics faces a rather difficult problem because of the scarcity of made-to-order readings, demonstration materials and techniques, and assignments and projects. A successful course simply cannot be taught by the 'free association' method. The difficulty in this connection is not quite as great now as it was in 1939, because Count Korzybski has published some particularly stimulating articles in the past year or two, Hayakawa has issued a revised edition of *Language in Action*, the second edition of Korzybski's *Science and Sanity* is now available, as is also, Lee's *Language Habits in Human Affairs*. The Institute of General Semantics has made a number of pamphlets and reprints available, and the more or less pooled experiences of a number of workers have been suggestive of more effective teaching techniques. More and improved reading materials can be anticipated.

As for readings in the course during the past two years, the writer has required all students to read and abstract Hayakawa's *Language in Action* and Johnson's monograph, *Language and Speech Hygiene*—in that order. Hayakawa's article 'General Semantics and Propaganda,' from the April, 1939, *Public Opinion Quarterly*, has been a stimulating reading selection for assignment early in the course, and Korzybski's papers 'An Outline of General Semantics,' and 'General Semantics, Psychiatry, Psychotherapy, and Prevention,' both reprinted by the Institute of General Semantics in Chicago, have proved to be effective reading materials for use about half-way through the course, after some degree of familiarity with the terminology of general semantics has been acquired. Among other readings, probably Korzybski's *Manhood of Humanity*, Karen Horney's *Neurotic Personality of Our Time*, and Max Born's *The Restless Universe* have been most used by the students.⁶

With regard to teaching materials, it should be mentioned especially that a number of the educational films, produced by the Electrical Research Products, Inc., have proved to be particularly helpful in certain sections of the course. It has been found that a good plan is to start the course with a generally orienting discussion, centered around the diagram presented a few pages back. This is followed by a discussion suggesting the fundamental place in general semantics of the notion of the process character of the world in its relation to problems of symbolization. Immediately following this, it is very helpful to show the students three of the *Erpi* films, in order to illustrate in a relatively extensional fashion the process-reality notion. These three films are sound-pictures dealing with electrons, molecules, and colloids, respectively.⁷ With these films one can probably accomplish more in one hour than in eight to ten hours of lecturing.

⁶ Wendell Johnson, *Language and Speech Hygiene: An Application of General Semantics*, General Semantics Monographs, No. 1 (Second edition; Chicago: Institute of General Semantics, 1941); Alfred Korzybski, 'An Outline of General Semantics,' *General Semantics* (New York: Arrow editions, 1938); 'General Semantics, Psychiatry, Psychotherapy, and Prevention,' *American Journal of Psychiatry*, XCVIII (September, 1941), 203-214; *Manhood of Humanity: The Science and Art of Human Engineering* (New York: E. P. Dutton, 1921); Karen Horney, *The Neurotic Personality of Our Time* (New York: W. W. Norton, 1937); Max Born, *The Restless Universe*, trans. by W. M. Deans (New York: Harper and Brothers, 1936).

⁷ For information concerning these films inquiries should be made to Electrical Research Products, Inc., New York City.

Some of Count Korzybski's classroom demonstrations have proved to be not merely effective, but practically essential. Those who have attended the Institute seminars will surely remember the 'match trick' and the 'finger-pinching'. The 'match trick' has been almost necessary in presenting the notion of 'minimum expectation' or 'maximum probability', in order to demonstrate extensionally the effects of maximum expectations. Intensionally, the whole point seems not to make sense. Extensionally, it seems to become relatively clear to most students. And it has been the writer's experience that the notion of the 'un-speakable level' of abstracting (silent level of direct experience) remains little more than a 'semantic blur' to the majority of individuals until they literally pinch their fingers, or carry out some other such simple extensionalizations of 'un-speakableness'. The notion of elementalistic and non-elementalistic terms is another one that can become involved in incredible obfuscation unless one resorts to an extensional presentation of it—as by means of the 'space', 'time', and 'matter' demonstration, carried out by means of a pencil or pipe, in poor lieu of Korzybski's cane with Korzybski shaking it.

One of the mistakes made by the writer—before the course came to be called *General Semantics*—was in presenting the structural differential before the students were ready for it. The differential, or an illustration of it, used to be shown at the beginning of the course, but this has not been done for more than three years. The first time it was done some student promptly christened it 'the Swiss cheese'—and that illustrates the point. The structural differential just doesn't 'mean' anything to a student who is utterly unfamiliar with what it is designed to represent. In fact, it is so different in appearance from any diagrams he is likely to be accustomed to, that it is rather likely to strike him as 'funny', or at least 'queer'. Consequently, the writer has worked out a procedure of presenting his own adaptation of the differential (as illustrated in *Language and Speech Hygiene*), drawing it on the blackboard *one level at a time*, with ample discussion of each level, and then of the diagram as a whole. Then, it becomes possible and desirable to compare this adaptation with Korzybski's original structural differential. In this way, it seems not too difficult to convey the main aspects of the process of abstracting.

As for assignments and projects, more have been discarded than have been retained of the many that have been tried. Some way should be worked out for teachers of general semantics to pool their experiences, 'good' and 'bad', in this connection. It has been the writer's experience that if term papers are to be assigned, a careful check of preliminary outlines had best be made; many strange things apparently can be written in the name of general semantics. Certain types of assignments have worked out very well. Having students make ten-minute talks on general semantics, as they would present the subject to a women's study club or parent-teacher association, has resulted in some remarkably good presentations. Assignments requiring students to describe their own characteristic identifications, undelayed reactions, etc., are sometimes very effective. Papers on possible applications of general semantics to personal problems and to the problems in the students' respective vocational fields are often decidedly worthwhile, especially if such papers are carefully supervised by the instructor. In general, it has seemed desirable to relate the assignments in some way to the problems and special interests of each individual student.

The matter of the 'big blue book' has been left for special, though brief, discussion. When, in 1936, the writer first read Alfred Korzybski's *Science and Sanity* he had just undergone a beneficent appendectomy, and for two weeks he had nothing to do but read. In all seriousness, it may be said that if one is going to read *Science and Sanity*, and do it justice, one needs an appendectomy or its equivalent. The book simply has to be read slowly and more than once. It should be gone over carefully three or four times. The reasons for this will probably be different for different readers. The writer found the terminology strange, the organization a bit complicated, and the basic orientation represented by the book decidedly different from what he had been exposed to previously; and he found that the implications of the book for him and for his particular problems had not, of course, been worked out and stated explicitly by the author. It was the working out of these implications that required the painstakingly slow reading and the numerous re-readings in the writer's own case.

Now, in most universities the proportion of students who could give *Science and Sanity* anything resembling an adequate reading is practically negligible. That is unfortunate, because it would be a joy to teach a course in general semantics to students who could have the time and the freedom from distraction to read *Science and Sanity* as it should be read. It is doubtful whether anyone can possibly achieve a definitely adequate understanding of general semantics without studying the 'big blue book' as thoroughly as it should be studied. This merely implies one of the serious limitations under which a university course in general semantics, under present conditions, has to be taught. There are possible solutions, however. One might offer, as has been done by the writer, what amounts to an advanced seminar, or special readings course, to a few of the students who have taken the course in general semantics. Under this arrangement a reasonably careful study of *Science and Sanity* turns out to be possible for a limited number of students. A few others will manage somehow to read the book during summer vacations—and now and then a student is blessed with an appendectomy, or an attack of influenza. Also, it has worked out at Iowa that several students have found it possible to attend one of Count Korzybski's intensive seminars at the Institute in Chicago. What is needed by practically all students is something in the way of an advanced seminar, something in addition to the sort of introductory course that can be administered in a university, under conditions of limited time for study and many competing interests for the students.

The last problem to be discussed is that concerned, as indicated above, with so-called 'public relations'. When general semantics is introduced on a university campus, there are bound to be discussions of it, discussions complicated by undelayed snap judgments, fantastic misunderstandings, humorous distortions, etc. There is nothing particularly strange about this. And usually there is nothing deliberately vicious about it. Certainly, in the face of it 'self-defensiveness is no defense.' If the general semanticist knows enough about general semantics to teach it, he will be able to handle the situation without aggravating it and without losing his own sense of proportion. Moreover, the great majority of his associates are likely to be quite tolerant, and a few will be actively and effectively interested. After all, he can not reasonably ask for more than

that—most of his associates are too heavily occupied with their own work to give any very considerable attention to the divers enthusiasms of their acquaintances.

In any event, it all comes down to the basic consideration that general semantics, like anything else, is going to be judged eventually, not by what its friends and opponents *say* about it, but by the actual work that general semanticists do, and by the way they conduct themselves as associates of the people with whom they live. If the general semanticist does effective and significant work, and is the sort of person other people like to drink coffee with, it is not likely that anyone will keep him from teaching general semantics, or anything else within reason.

To the degree that general semantics has been accepted at Iowa, it seems reasonable to assume that it has been accepted because of the research that it has stimulated. The papers presented at the Denver Congress by the Tuthills are representative of that research. The interpretative aspects of the studies of stuttering presented by Spencer F. Brown and the present writer also reflect the influence of general semantics. In another report to the Congress there is a summary of other related research so far completed or in progress at Iowa. It is the judgment of the writer that the status of general semantics in the academic world is going to be determined to a very considerable degree by the character of the scientific investigations that are made in its name.

In general, then, the solution to the 'public relations' problem that is faced by general semantics—as it must be faced by every new and lusty outlander—would appear to lie in effective work on the part of general semanticists, significant teaching and writing, effective applications to clinical, educational, and social problems, and well-executed significant scientific research. It lies, also, in demonstrations of the ability of general semanticists to apply general semantics themselves, in their own personal-social adjustments. These things are far more important than anything that might be *said* by anyone for or against general semantics. In the final analysis, if the friends of general semantics do not embarrass it, its opponents can do little to retard its potential development.

These, then, are some of the main problems which have been encountered in introducing a university course in general semantics. In indicating actual or preferred solutions to these administrative, instructional, and 'public relations' problems, the writer has attempted to be provocative rather than dogmatic. The formal teaching of general semantics is relatively undeveloped, and we are still so far from knowing all the answers that we don't even know most of the questions. The whole area is one that should appeal to anyone who has a fondness for frontier life.

Finally, it seems desirable to say a word about any apparent effects or results of the course. In published material made available through the Institute of General Semantics and in the sessions of the Denver Congress, we have been made familiar with many reports of favorable results obtained from applications of general semantics to various types of problems in various fields. The writer's experience tends generally to corroborate such reports. On the whole, the students have seemed to be markedly responsive. Certain changes in the behavior of many of them have been observed, as a result—or so one might judge—of their study of general semantics. A number of students have said that they 'found general semantics highly stimulating'; that they 'got a great deal of benefit' from it; that 'it was a college education in itself'; that they 'wish

they had had such a course as freshmen or in high school'; etc. It is manifestly difficult to evaluate such statements, and no attempt has been made to *measure* the results of the course. It has been observed that some overly verbal students tended quite definitely to acquire delayed verbal reactions, and to come to speak less vaguely and heatedly and more accurately and reflectively. Many apparently trivial, but collectively important, behavior changes have occurred, usually without any direct discussion or treatment of them: some food dislikes have been eliminated; prejudices of various sorts have been weakened or abolished; fears and resentments toward parents, teachers, employers, acquaintances, etc., have been decreased or cleared up; difficulties of the nature of insomnia have been lessened; silent reading rate and comprehension have been increased in some cases, although remedial reading, as such, was not covered in the course; feelings of inferiority and other mild persistent anxieties have been definitely decreased in a number of cases. Through individualized work with general semantics the rather serious tendency of one individual to gag, and even to vomit, when eating with other people was for all practical purposes overcome; one severe case of stage-fright was quite definitely corrected, and stage-fright tendencies in some other students were unquestionably weakened; etc. A teacher of journalism who took the course felt that his instructional methods were consequently improved. Some students have reported—and it is to be taken for whatever it may be worth—that by applying general semantics they have been able to improve their work in other courses.

It is clear that such a report as this is most impressionistic, and it could hardly be otherwise. It can only be summarized by the statement, again an impressionistic one, that the apparent effects of the course in general semantics have been gratifying. As a matter of fact, the writer has never taught anything else that was, so far as could be judged, as generally provocative and as beneficial in its effects on the students. But it must be emphasized that these remarks are not rigorous and are to be evaluated accordingly.

The experience of introducing a university course in general semantics has been, indeed, an extremely stimulating and pleasant one. It has demonstrated quite clearly that such a course is feasible and that it meets a widespread and fundamental need.

SPEAKING ABOUT SPEAKING—AND GENERAL SEMANTICS
PROLOGUE TO AN AS YET UNWRITTEN, FULL-LENGTH PLAY TO BE CALLED
'GENERAL SEMANTICS IN THE COLLEGE SPEECH PROGRAM'

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INTRODUCTION

A suitable presentation of the subject of general semantics in relation to the college speech program is not to be lightly undertaken. At the Congress at The University of Denver the author presented a paper on this subject. As he revised the paper for publication along the lines of the usual scholarly and documented study it became apparent that such a paper (at least as far as the present writer was concerned), in spite of great care, would not properly convey the necessary notions of general semantics. The problem lay in the semantic difficulties of conveying general semantics to many of the present generation of speech educators. In presenting the original paper orally the writer had the advantage of all of those 'thalamic' aids of vocal flexibility and variety, of pitch and intensity inflections, of vocal emphasis, and of bodily gestures and punctuations. Also, in delivering the paper orally he could study the reactions of his auditors and immediately adjust his statements, illustrations, and other materials to insure that he was being understood somewhat as he wished to be understood. In submitting a manuscript to be printed the necessary space limitations required a highly abstract treatment and the omission of the concrete and illustrative materials to convey the formulations adequately. It was felt that for the materials to stand in the printed form without these aids would be to risk gross misunderstandings.

In presenting these notions from general semantics in the form of a 'prologue to a play' it is hoped that a more accurate picture may be conveyed than would be possible in the form of a scholarly paper. Only a few of what we consider to be the many implications for speech education are suggested in this prologue. As this author views general semantics perhaps a presentation of the subject might best be undertaken by a poet, i.e. a writer who can best combine feelings and sentiments with 'intellectual' discipline.

The characters in the play illustrate in some of their responses what is meant by *undelayed* reactions, *all-ness* and *identification*, and other manifestations of mis-evaluations as presented by Korzybski. Perhaps this dialogue will suggest to the speech teacher new standards of achievement which the field of speech education opens to him through approaches from general semantics. At the same time when the characters in this play are manifesting semantic disorders they are also illustrating what happens in some laymen when they begin to semanticize about semantics. The disorders are perhaps fairly representative of the reactions of some excellent scholars in the speech field when they first come into contact with the work in general semantics. Any similarities to present persons in the speech professions are purely accidental.

The viewpoint on general semantics which is given herein represents the work which has been developed at The University of Denver during the past three years. General semantics has not been taught as a separate course but has been presented as a part of the basic speech course. From this core the advanced courses take their departure. In the senior and graduate seminar on Speech Problems general semantics is made a basis for speech and dramatic criticism.

CAST AND SCENE OF THE PROLOGUE

The Professor of Speech,
 the College of the Mississippi.....DR. CICERO H. GRANT
 A Professor of Speech, the State University
 of the Mid-West.....PROFESSOR M. WEXLER BARR
 A Professor of Speech and Chairman of the
 Department, Plateau University.....DR. RICHTON MOORE
 Director of the School of Speech,
 University of the Atlantic.....DR. MARK MILLINGS

SCENE: *A summer evening at the home of Professor Barr. Drs. Grant, Moore, and Millings have been brought to the University of the Mid-West as guest contributors to a conference in Speech Education which is scheduled for the next three days. Professor Barr has invited these men for a social get-together the evening previous to the conference. All four men are well known in the field of speech education, and have written textbooks in their specialties. Dr. Grant is a leading scholar in public speaking and the classical rhetoricians; Professor Barr is a leading authority in discussion and debate, the history of speaking, and director of research in this field; Dr. Moore's background is largely in speech correction and public speaking, while Dr. Millings is especially well known for his work in oral interpretation and dramatics.*

THE PROLOGUE

MILLINGS: There is not a thing new in *general semantics* which a careful scholar does not already know and already apply. A scholar takes careful pains to say exactly what he means, to make the 'words fit the territory'. Certainly he defines exactly and he knows the nature of the sources of the facts which he uses. Why are these semanticists so 'hipped' on the idea that they have a great discovery?

GRANT: If they would go back and really study Aristotle's *Rhetoric* they would find it all there, and more, too!

BARR: I tend to agree. For instance 'all-ness'. They merely have a new name for what we have for many years been treating under 'hasty generalization'. Yet, I feel the General Semanticists may have something, but for the life of me, I cannot see what it is.

MILLINGS: A lot of it is the same old stuff as the 'philosophy' which was my college major. It was so terrifically wordy and got nowhere, so I quit it in disgust. If semantics is like that at all, I don't want to have anything to do with it.

BARR: Looks like a fad to me.

MILLINGS: Yes, a lot of 'cultists'. The 'great I am-ers' of the speech field.

GRANT: More like an 'ism'. You remember what the psychologists have been going through the past fifty years—the structuralism of Titchener, the functionalism of James, the behaviorism of Watson, gestalt and organismic psychology, mental hygiene and psychiatry, and now the general semantics of Korzybski. And we speech teachers are supposed to run around with our tongues hanging out adjusting our work to all of these changes. I'm not that crazy yet.

MOORE: Perhaps, psychology and speech are the better for all of this. Every one of these movements left an important contribution to these fields and I have a hunch that general semantics will leave a still greater contribution. In fact, general semantics continues that tendency to depart from the rather static 'concepts' of the psychologist, Titchener (of whom our elocutionists were the speech prototypes) through the more and more dynamic approaches of William James (of whom our J. A. Winans is representative), John B. Watson (of whom our Charles Henry Woolbert is an example) on down to Kurt Koffka and Raymond Holder Wheeler and other present-day psychologists who are influencing our field.

GRANT: Yet, many of us get along very well without any of these 'psychologies' which, unless we do speech correction work, we scarcely need at all.

BARR: Those simple days are over in our profession if Korzybski's notion that speech behavior is an aspect of the reaction-of-the-speaker-as-a-whole-in-the-situation-as-a-whole were applied in our methods. This would indicate that we must not view speech behavior separated from the speaker whose welfare it represents and the social processes in which it operates. Thus isolated it becomes as dead as any fish taken out of its lake.

MOORE: If I remember my seminar with Dr. Charles Henry Woolbert correctly, he was tending very much toward a similar view. But Woolbert's speaker-as-a-whole was important only from the standpoint of getting appropriate bodily and vocal control. No one had put together (in 1925) the dynamic and relativity notions of Einstein and others which came out of physics and mathematics, with the developments from psychiatry and mental hygiene. Korzybski pulled these fields together and devised some tangible methods we can use. And these methods are potent additions to our work.

MILLINGS: That's just what disgusts me. The semanticists dabble in everything under the academic sun. And they speak glibly of Einstein whose theories somebody said only twelve people understand! And expect us to apply them.

GRANT: And their main purpose appears to be to parade a new jargon. Terminology for the sake of terminology! Furthermore, they can't write. I gave up *Science and Sanity* as hopeless.

BARR: But that statement represents a sort of reaction which Korzybski hopes to improve. Some of us in speech, like many of our brethren in the English field, strenuously and 'emotionally', impulsively and with instant 'undelay', flare up at the mere mention of a new word. I notice a goodly number of us have avoided the newer work in

speech pathology because it takes us into medical and psychological terminology. We don't object to the doctors and engineers inventing a necessary term, but we are exceedingly reluctant to admit a new term, and hence in many necessary instances, a new notion into our field.

MOORE: Let us drop Einstein for the duration of this discussion. Perhaps we might let him cancel out Aristotle. One is about as difficult to read as the other.

BARR: To go back to the speaker-as-a-whole-in-his-situation-as-a-whole, I understand that Korzybski refers to the adjustment which a speaker makes as his evaluation of the situation. This evaluation may be more or less adequate. Now what implications does this notion of evaluation have for speech education?

GRANT: But first, just what is this business called *evaluation*? What is its definition? And while you are at it, define general semantics from the standpoint of speech education.

MOORE: It is *not* what I say it is.

GRANT: What kind of double talk are you trying to give us, 'It's not what I say it is'? That's about the most idiotic statement I ever heard from a speech teacher! What's happened to you? Of all the poppycock! If a teacher of speech can't be clear and definite he can't be anything!

MOORE: You surely are aware that a definition is not the same as the 'object' it covers. My dictionary says that a horse is 'a large solid-hoofed, herbivorous mammal, domesticated by men, and used as a beast of burden, a draft animal, or for riding.' These words don't begin to cover the characteristics of the animal. It might just as well be an elephant, a pig, a mule, an ass! The words not only cannot completely cover the object, they are not the object. And so, general semantics is not what I say it is. If you understand this business you will have to get both the *is not* and the *is* of it.

[GRANT and MILLINGS appear dazed.]

Perhaps what I say might roughly indicate a direction in which to 'think' about it. I heard Dr. S. I. Hayakawa say that general semantics may be referred to as a method for improving the reactions (or evaluations) toward symbols or symbol situations. Evaluating has to do with deciding what is more or less important in a situation. By our evaluations, by our reactions or attitude as a whole toward the situation, we indicate what factors we 'think' are more important and those we 'think' are less important. Our adjustments will be more appropriate as our evaluations and the predictions which follow from them are adequate. The aim is to help our students to put first things first and last things last, not reverse this procedure as some of them want to do at times.

GRANT: Just what does this have to do with their speech?

BARR: Wouldn't their evaluations make up the content and delivery of their speaking? Isn't a speech a string of evaluative reactions? And as such indicative of the adjustment-as-a-whole of the speaker?

MILLINGS: What does this all have to do with something specific? For instance, the speaking voice?

MOORE: The speaker who talks too rapidly, or with a too high-pitched voice, or who is having trouble with breathing, or who is too subdued, or who has a voice pattern, frequently does this as an aspect of his evaluation of what he is talking about or of his speech situation or both. His voice reflects his evaluations, his reactions to his whole situation.

MILLINGS: Will you carry that on into oral interpretation?

MOORE: The student is asked to read something before the class either impromptu or as an assignment requiring careful preparation. The attitude and efficiency with which he approaches the task, the resistance he puts up, the impulsive remarks of dislike, the refusal to concentrate on the job, the concern with the words in the text instead of their 'meanings' or the 'territory-facts', the inability to get 'meanings' from the printed page, the inability to project those 'meanings', the rationalizations about his reading, the fear and stage-fright—these are indicative of his evaluation of that situation.

GRANT: A good deal of that behavior applies to many students when we assign them to make speeches.

MOORE: In oral interpretation, the speaker is reacting to the symbol situation with the symbols (the printed page) already formulated for him. His task is so to react to these symbols, to grasp what the author used them to represent, and to project clearly their significance in line with the author's purpose. For the speech-making, the student must formulate and organize his own symbolizations. From the instant the assignment is made through the gathering, organizing, and adaptation of materials, and the refining and the delivery of the speech the student's reactions and evaluations in this task are more or less efficient. One of our functions certainly is to help the student to improve all of these reactions. Most of us have been trying to do this in the past. General semantics gives us new specific aids.

BARR: And when we improve the evaluative reactions of the speaker, he will get along better with others, he will contribute more wisely, he will be better fitted to help out the social processes in which he lives.

MILLINGS: But that idea of having the student put his speech reactions in a test tube is not new.

MOORE: However, through general semantics, we have available new methods and new applications of old methods to enable the student to help himself.

MILLINGS: Illustrate one of the new-old methods.

MOORE: Some of us have been using a modified method borrowed from psychiatry to help the student get rid of his worry and stage-fright in public speaking situations. We have been asking him to talk out his problem, describe, locate, and analyze it,

trace its history, and obtain insight into its origin.* Korzybski comes in with several specific aids to make this method more definite and effective.

MILLINGS: What are these aids?

MOORE: He suggests that the student in tracing the history of his difficulty allocate the fears and unpleasantness to specific persons, specific circumstances, at specific dates. In this indexing and dating procedure the 'fear' is focussed on the events to which it belongs. In doing this, the 'fear' is narrowed and used up on the situations where it might have been more appropriate. The student tends to relax and so resistances to the present project tend to disappear. He will then, perhaps, undertake his project in a more direct and efficient manner.

GRANT: And in doing this for the student, the speechmaking assignment may become the occasion for obtaining rather profound personal benefits.

MOORE: But underlying this indexing and dating technique are more profound implications than appear on the surface. The speaker's 'fear' is a response only to the *similarities* that the present speech situation bears to the earlier unpleasant situations. The indexing and dating enables the speaker instantly to see the *differences* between the two situations, to see that that earlier situation no longer exists, that the situation and he are both different now, and this helps him to make a more appropriate evaluation of the present situation which is the one to which he must adjust.

BARR: Proper evaluations, then, rest upon responding to both the differences *and* the similarities of what is occurring now and what has occurred in the past. To use the indexing and dating technique (and the other extensional devices) would not be effective without considerable background in general semantics?

MOORE: This involves the discipline which comes from learning to react in harmony with the several chief formulations on which general semantics is based.

MILLINGS: What are they?

MOORE: In my basic speech classes, I attempt to help the students do the following: first, become oriented to a world of universal change and process; second, to become conscious that they are constantly abstracting; third, to obtain a sharp awareness of the relationships between words and the 'facts-in-process'; fourth, to eliminate what Korzybski calls *identification* and *all-ness* reactions; and fifth, to use the extensional devices. In addition, I emphasize the self-reflexiveness of human reactions, especially of language reactions. But I should explicitly warn that in this mouthful of high order abstractions, there is a tremendous challenge to our abilities as teachers of speech.

BARR: Do you imply that teaching these materials is difficult?

MOORE: In certain situations, extremely difficult; in others, very easy. It depends upon the student and the teacher. The conventional lecture, reading of references, and quiz may almost completely fail. Students may obtain a verbal mastery of the formulations;

* As representative of this method see Elwood Murray, *The Speech Personality* (Philadelphia: J. B. Lippincott Co., 1939), Chs. VI and VII, Appendixes 1A to 1H.

they may glibly discuss them while missing the implications and applications in their own lives almost completely. Notice I said 'almost'. And unless these methods immediately function in their moment-to-moment-adjustments—you may be assured that they are not mastered.

GRANT: Then what precautions do you suggest in teaching the method?

MOORE: Perhaps the first requirement is that the speech teacher discipline himself and so be a good example of 'delayed reactions', and consequent adjustment. In doing this he must avoid 'flare-ups', temperamental eccentric behavior, or mannerisms which some college instructors manifest. Occasionally an instructor may lose his perspective on general semantics. Incongruous, indeed, is the instructor who attempts to present general semantics who himself is what the students might call 'hipped on semantics'. As a rule these over-enthusiastic 'disciples' of Korzybski merely need more time and study to mature.

The chief precaution in explaining the general semantics methods is to present a great number and variety of concrete cases to illustrate each formulation, each technique, each device. The cases should be so numerous and clear that the presentation of the formulation to fit them will be very vivid. Graphs, charts, diagrams, demonstrations, or equivalent procedures are imperative at every new point. What might ordinarily pass as effective instruction may be quite inadequate here.

BARR: What would you say was the chief change in the 'thought' habits you attempt to bring about in your speakers by these methods?

MOORE: I would only speak for myself in this, but these methods of general semantics, if properly presented, tend to develop more of two characteristics in the 'personality' of our speakers; first, the careful, circumspect, penetrating, and qualified statements of a mature 'scholar' in the matters about which they speak; second, more stability, poise, objectivity, and productivity or creativity in their speech reactions.

At the same time, our aim in teaching these methods might be said to be to bring out more of the sensitivity and insights of the poet in the living of the speaker; to help him to 'see' the speck of white in the black, the speck of black in the white, the 'false' in the 'true', the 'good' in the 'bad', the differences in the similarities, and the similarities in the differences, the 'reality' beneath the mask, the changes within the changes, the multitude of causes instead of *the* cause, the permanence of impermanence, etc.

GRANT: Is that what you referred to when you said awhile back that general semantics *is not* what it *is*?

MOORE: Quite emphatically. We want our speakers to be aware of the *is not* in every reaction in which they imply 'this *is* something.' When they are able to do that, to see the *is not* as clearly as the *is*, to see the white in the black, etc., they will be able better to evaluate those indefinitely many differences which are occurring about them in that dynamic world to which they must adjust.

MILLINGS: It seems to me, my dear Moore, that you admirably restrained yourself at the beginning of this conference. Do you remember that crack I made about general

semantics as all old stuff, the same as the 'philosophy' I had years ago. In that statement I was a prime example of the gamut of semantic disorders. My evaluation was based too much upon similarities and not enough upon differences. Upon the basis of a similarity or two, I confused general semantics with the 'old stuff' which I had taken years before. Also, I apparently was having some fancy 'undelayed' reactions when I compared it with some of the 'isms' and cults I have run into. Furthermore, this identification was accompanied by such emphasis, feeling and dogmatism that my evaluation certainly approached an 'all-ness'. Also, it seems now that my outlook might have been a little too static. We don't like to recognize disturbing factors.

GRANT: Indeed, about the most disturbing factor which has ever entered the field of speech education—although I now recognize there are similarities to what we have been doing in the past. And general semantics does have some similarities to Aristotle's *Rhetoric*. But it really was very inaccurate for me to say that if you really knew your Aristotle that you would find it *all* there. Talk about an 'undelayed' reaction!

BARR: We might note that Korzybski carefully distinguishes between Aristotle and the Aristotelians. It would be interesting to study what the followers of Aristotle have done to his works in our field. And from the standpoint of abstracting abstractions and inferring about his inferences and other semantic approaches, his 'followers' have done him plenty! My hunch is that if Aristotle were living today, he and Korzybski would make up quite a mutual admiration society.

MOORE: When I first went into this work, I remember the shock which one of my pet assumptions received. It was a matter which we have taken for granted all through our work; namely, that we are justified in applying all available procedures to our students to make them all more verbally facile and fluent. Of course, we have been careful to insist on adequate content and research. We put these students through most strenuous regimes of research and documentation in order that they would have 'something to say'. We required them to collect materials which gave evidence of practically exhausting the subjects about which they gave speeches, discussions, debates, etc. These materials were assembled in card indexes, rigorously analyzed, carefully briefed, 'cases' were formulated, and the students were then put through their season of debate, extemporaneous speaking, discussion, speechmaking in the speech classes or before outside audiences or both. And, out of this procedure many of our students developed speech skills which appear highly satisfactory to many of us.

GRANT: And now general semantics is just about ready to land a knock-out blow on all of this! We breathlessly await the blast!

MOORE: The blast is not aimed anymore at our speech work than it is aimed at the time-honored educational procedures and 'philosophy' on which the methods necessarily depend.

May I suggest that when we help to make a student more facile in handling 'issues', 'specific instances', 'testimony', 'illustrations', 'analogies', 'causal reasoning', 'generalization', 'deductions', 'partitions', 'summaries', etc., without teaching him something equivalent to *consciousness of abstracting*, the essential principle of general semantics, that we may, in certain cases, be contributing to his maladjustment.

MILLINGS: Frankly, I have been disappointed in the later accomplishments of some of those I considered to be our most 'brilliant' speakers. Too many of them have slid into a complacent mediocrity which does not fit in with their earlier promise. A few of them have definitely deteriorated. What does 'consciousness of abstracting' have to do with this?

MOORE: If we teach the student that his 'materials' and his so-called 'facts' cannot exactly cover the events and 'reality' about which he is talking, if we make him thoroughly aware of the *is not* which should go along with his *is* statements (at least as 'mental reservations'), when he sees the 'white' in the 'black', the differences in the similarities, the 'no' in the 'yes', if he becomes sharply aware that even his more careful statements represent only a partial 'knowledge', that some factors are always left out, our efforts will surely be beneficial to him. At first the effects of this are usually greatly to slow him down and sometimes silence him. When the student first becomes conscious of abstracting, when he realizes the incompleteness of his statements, he becomes markedly less fluent, he may become much more silent for a while because he begins to 'think' before he speaks. But after a rather short period, all of the cases we have observed come out of this with more accurate verbal formulations, greater circumspection in their statements, and in general more appropriate evaluations.

I have seen several 'debaters' and 'orators' become almost psychopathic in certain respects and I believe that their life difficulties had some connections with their great verbal facility and fluency. Some of them were especially apt in analysis of a debate or discussion proposition. Their apt handling of 'data' and 'proof', their impressive marshaling of 'arguments' was apparently done without reference to anything in the 'real' world of processes about which they were so glibly verbalizing. They were building habits of orientation to a world of words, a world which existed only inside-their-skins, an intensional instead of an extensional orientation. Their superior 'scholarship' was, in their particular cases, an indicator of approaching neuroses.

BARR: The student should be made aware that his abstractings are not the 'real' world. Without consciousness of abstracting the student frequently has the notion that the world as he 'gets' it is *the* 'real world'.

In this respect another assumption of mine about speech education may also have to go by the board. That pertains to argumentation, as such. I had always assumed that argument and controversy serve as a healthy indicator of democracy at work. At their worst they at least serve cathartic purposes—far superior to the force and conflict of totalitarianism. Does general semantics give us any new points of view on this? Or, do you consider my assumption here valid?

MOORE: At least general semantics heavily underscores certain notions which demand much attention in our profession. Besides being futile and wasteful, much of our private and public controversy manifests grave evaluative disorders on the part of its participants. In many cases argument contributes more to mis-evaluation than it does to proper evaluation. However, when it goes on with a proper reference to the specific cases, when the characteristics and limitations of word-fact relationships are clearly recognized, proper evaluation is facilitated. At the same time the vast majority of disagreements almost automatically disappear.

BARR: I suppose that if the arguers understood the self-reflexiveness of their reactions and their languages, the verbiage would immediately be cut down.

MOORE: Your remark, Grant, that general semantics appears as one of the most disturbing factors which ever entered speech education reminds me of Korzybski's point in his Introduction to the 1941 edition of *Science and Sanity* that the introduction of a new factor into a situation may transform the whole situation. He furthermore says that if we don't change our generalizations and standards of evaluation accordingly, we build up delusional situations for ourselves. To me this rather emphatically applies to speech education today.

MILLINGS: Indeed, sufficient has already been said to raise very profound questions about some of our so-called standards.

MOORE: The chief issue for speech education is whether we are going to continue to be satisfied to train a goodly percentage of our speakers to be 'adjusted to maladjustment' as Korzybski puts it. And that's what we are doing when we merely work with separate speech 'skills' and blithely gloss over the fundamentals in a speaker's adjustments which keep the speech behavior immature.

GRANT: Many speech teachers will balk at this. They are not prepared to make the rather profound re-orientation of their work which is required by these more dynamic approaches. As for me, I certainly am not prepared to change drastically methods which are the result of a lifetime of study and experience.

MILLINGS: But the issues raised are so important that they will not be ignored. It is interesting to note that many of our most reputable speech teachers are interested in the contributions of general semantics. In any event, I believe that we all agree that speech education isn't going to escape the widespread revision of education in the upheavals ahead, as matters appear to me.

BARR: Because of the nature of our subject, because as teachers of speech we are required to work rather intimately with our students, perhaps our subject has extraordinary potentialities for their development. The methods we have been discussing make those potentialities still more significant. If as teachers of speech we do not arise to our opportunities, we may rest assured that someone else will do this for us. If we do assume that role which our subject uniquely permits us as teachers to take, we may have a fair share in that educational reconstruction which lies ahead.

CAN GENERAL SEMANTICS FORMULATIONS BE INCLUDED IN THE SCHOOL CURRICULUM?

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The question, 'Can general semantics formulations be included in the school curriculum?' is non-sensical. One might as well ask, 'Can a new methodology of guidance be included in the older methodology it seeks to revise?' But the question does call for a comparative analysis of current educational guidance-techniques or methodology. These techniques or methodology are frequently called the school curriculum.

The term *curriculum* as herein used does not include educational 'aims', 'goals', 'credos', etc. The sincerity and ends-sought-after by the educational profession are not questioned. Curriculum is used as a shorthand term for the additive characteristics of the subject-sequence, and for the static presentation techniques by which the average system—elementary, secondary and college—affects the guidance program. It should not be inferred that all school curricula are fully described by the foregoing labels. Especially in the elementary 'bracket' such trends as 'the experience curriculum'¹ evidence a departure from the more elementalistic methodology. But in the main, the school curriculum as applied today has the above given characteristics.

Frequently the semantic reactions to the higher order abstractions *correlation*, *integration*, *enviro-organismic* and *functional* allow us to presume that such terms actually describe the effect of the 'modern' curriculum. At any rate, they allow us to play blind-man's-buff as we indulge in so-called curriculum 'revisions', which aren't revisions at all, but a rearranging of the old elements. We talk about vocational 'guidance', even set up a clinic, and then continue subjecting youth to the curriculum-content basic to the maladjustment we seek to 'cure' by establishing the 'guidance' program.

An educational institution appoints a 'steering committee' or a 'correlating committee' whose task is not to revise the basic substance of the curriculum, but to alter the presentation-procedure. Instead of offering—say, English, Social Science, Literature and Speech as four separate courses of study, the committee conceives of effecting a 'correlation' of subject matter so as to allow for student-integration by presenting these subjects alternately in one course called *Orientation* or *General Education*. On one day they have Grammar, on the next Speech, and so on; and they frequently use the same texts as called for in the former class-schedule. I have in mind the freshman curriculum of two teacher-training universities: both were fashioned on the above plan. The procedure had one 'advantage'—the students were kept confused and by the end of the year appreciated the specific-class enrollment to come. If telescoping elementalistic subjects would solve the problem, our task of overhauling the curriculum would be simple. (It might be observed that administering castor oil three teaspoonsful

¹ Helen Heffernan, chairman, *Newer Instructional Practices of Promise, Twelfth Year-book* (Washington, D. C.: National Education Association, 1939).

per hour instead of one tablespoonful per hour does not alter the basic characteristics of castor oil.)

With reference to educative techniques, the methodology by which the public school attempts to direct the adjustment capacity of an individual, the student of general semantics might make the following request: to have the methodology based upon the reaction capacity or neuro-physiological mechanisms of the individuals to be guided, and not upon the out-dated experience-records of centuries past. Accept our linguistic heritage as the product of former understanding, and not as 'unalterable truths' which must be superimposed upon the experience-records of 1941.

From the point of view of general semantics it is to be requested that any symbol-map be used to depict only its original and individual territory,² and not carried along as a 'universal' evaluational mold. Our forefathers may not have 'lied in their beards' as regards their epochs, but when current generations evaluate the immediate past and predict the future by applying the interpretations posited centuries ago, their evaluations cannot claim a minimum of possible error.

Our task in revising our educational techniques appears to center on the problem of securing the 'tools' which allow us to revise continuously our evaluation-graphs that allow us to interpolate properly changes in human behavior. Basic to such revision and interpolation is an appreciation of the function of the neuro-physiological mechanisms involved. While the system of general semantics does not attempt finalistic explanation of the exact structure of those mechanisms, it has formulated certain orientation techniques based upon their functioning. We would not go far wrong in considering the formulations and techniques of general semantics as 'tools', the use of which may avoid the confusion of neuro-linguistic and neuro-semantic reversals. These 'tools' are available to the educational systems, but they are not compatible with the current educational methodology—the school curriculum. The formulations of general semantics demand that the 'educative process' be extended past the boundaries of the school plant and the course of study. The educative process involves every moment of living and encompasses the emergent social patterns. The school curriculum as we know it cannot include general semantics formulations, for in the process of 'injesting' them it would become something quite different from what it is.³

² See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

³ In addition to the works referred to above, see R. J. A. Berry, *Your Brain and its Story* (New York: Oxford University Press, 1939); California Curriculum Commission, *Teachers' Guide to Child Development in the Intermediate Grades* (Sacramento: California State Department of Education, 1936); C. J. Herriek, *Neurological Foundations of Animal Behavior* (New York: Henry Holt and Co., 1924); Alfred Korzybski, 'General Semantics, Psychiatry, Psychotherapy and Prevention' (Chicago: Institute of General Semantics, 1940). Mimeographed release; Missouri State Department of Education, *Courses of Study for Elementary Grades* (Jefferson City, Mo.: State Department of Education, 1937); O. L. Reiser, *The Promise of Scientific Humanism* (New York: Oskar Piest, 1940).

GENERAL SEMANTICS AND READING INSTRUCTION¹

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Years ago man believed that the earth was flat, stationary in space, and the center of the sun's daily revolution. So plausible was this explanation of 'ostensible facts' observed daily by everyone that for fourteen centuries it was taken for granted to be unquestionably true. As long as men were content with their naïve deductions from common spatial, geographic, and diurnal observations, the world did stand still in an important sense; the spell was cast, it should be noted, by *false* knowledge rather than by ignorance.

Someone, however, questioned these inferences about the nature of the earth and the universe; a skeptic called attention to the hidden and anthropomorphic assumptions present in men's 'thinking' about these matters; a student, provoked by doubt into making careful, controlled, and objective observations, found additional facts about the stellar events that everyone 'understood'; the Copernican finally succeeded the Ptolemaic interpretation. An important astronomical error was thus corrected. Of far greater significance, this and similar revisions of other hoary dogmas served to establish a revolutionary 'mode of thought' or *method* for discovering 'truth'. A direct sequel may be found in the remarkable technological and scientific developments of the nineteenth and twentieth centuries.

THE LAG IN LANGUAGE

In the humanities, however, the scientific method of inquiry began to be applied only during the last several decades (and has been influential thus far in reconstructing these studies to but a moderate degree).² In these areas primitive rather than scientific 'thinking' prevails among people generally, as well as among many professional 'scholars' and most school teachers. Let us consider, for example, our attitude toward language. Here is a phenomenon we simply take for granted. Oh yes, we chafe at language bonds in argumentation, we are embarrassed sometimes at our inability to find readily the words that convey our full intent and 'meaning', on occasion we wonder which word is best to use (if we are unusually daring, or uninhibited, we may coin a word or adopt simplified spelling). But the adequacy of language for performing its designated task we do not question, nor consider questioning. We do not look at language as we do at microscopes, pencils, electric drills, can-openers, houses, automobiles, etc., fashioned by men to perform definite functions. We do not ask of language—as we do usually of a can-opener and occasionally of a house—how well does it perform? and

¹ Sections of this article are adapted from a paper presented by the writer at the Second American Congress on General Semantics at the University of Denver, August 1-2, 1941. This article, in substantially its present form, appeared as 'Semantics and the Teaching of Reading,' *Educational Method*, XXI (1942), 270-277.

² Cf. Oliver L. Reiser, *The Promise of Scientific Humanism* (New York: Oskar Piest, 1940).

what are its limitations? We do not expect a can-opener to cut through the hull of a steel battleship. But we do not even pause to consider whether our present language and language habits are adequate for solving our complex social, economic, political, and educational problems, all of which we attempt to analyze by means of language. We assume unconsciously that language is a 'good tool', that the instructions for using it properly are contained in dictionaries and grammars, and that the rules are to be learned through memorization and parsing the classics.

Not very often do we think of language as having a structure and syntax which reflect our notions of causality, of time, of nature.³ We do not appreciate that the language we use today is better equipped structurally for describing the ancient world as explained by mythology than the modern world as explained by science, and that it has woven into it the assumptions concerning the universe and human nature which men held beyond question centuries ago. To cite a common example, we still say 'the sun rises' and 'the sun sets'—expressing (although not, as a rule, believing) the literal notions about sun-earth relationships current ages ago when our basic language forms were being crystallized. We still say, 'the rose is red,' because ancient man believed unquestionably (and improperly) in the evidence of his senses that color is *in* the object. People still talk of 'mind' and 'body', of 'intellect' and 'emotion', etc., as separate 'entities'; despite Einstein they continue to separate time *from* space. Our language, fashioned when these nouns represented *separate*, independent notions and formulations, now helps to perpetuate the false-to-fact dichotomies and fragmentations of reality just mentioned. Much of our language was shaped by men who believed they lived in a *static* world composed ultimately of minute, discrete, solid, changeless bits of matter called atoms. But modern science pictures the world as a *dynamic process* of continuous, rapid, electronic flux and change underneath the more or less stable and enduring façades to which our sense organs react.

GENERAL SEMANTICS TAKES UP THE SLACK

Shall we scrap our language then? Of course not! It is too pervasive and important a vehicle to be relegated by fiat to the junk-pile. Nor should we want to discard it, for it is rich in cultural values that remain significant and which we wish to preserve. What needs to be done is to inform ourselves about language: how it works, its pitfalls and hidden assumptions, the precautions necessary for using this powerful 'tool'—to the end that it may serve its proper function of facilitating, rather than hindering, the adequate communication of man's experiences to himself and to others.

It is here that the general semanticist provides definite aid. In various formulations, he has enunciated principles—sometimes very simple and obvious, yet usually ignored—that point the way to adequate, dependable, sane language-behavior.⁴ First of all,

³ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

⁴ Teachers at all levels of instruction who wish to gain an understanding of general semantics will find the following two, recent, very readable little books of inestimable value: S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace and Co., 1941); Irving J. Lee, *Language Habits in Human Affairs* (New York: Harper and Brothers, 1941).

The secondary-school teacher, especially of English, who wishes to extend his ex-

perhaps, he urges us to be conscious of our linguistic environment as a potent, insidious, and ever-present force in determining human evaluations and behavior. To avoid misinterpretations of linguistic symbols and consequently improper reactions in ourselves and others ('faulty organismic evaluations', as the general semanticists would express it), we must recognize that the 'meanings' of words are not in the symbols but in our nervous systems and these 'meanings' for us are dependent always upon the multiple contexts in which they occur. He has shown also that all words are abstractions, that is, over-simplifications and static representations of complex ongoing processes, many of whose characteristics are inevitably left out of verbal descriptions. So, words can *never say all* about a given event. In reading, writing, speaking, and hearing statements we must be conscious that they are *partial*, fractional, representations. And we must discriminate between descriptive statements of observable fact and inferential statements.

The general semanticist tells us further that the word *is not* what is spoken about. It is on a different level of abstraction and serves only as a convenient label, tag, sign, name, etc., which we have learned to associate with some object, happening, relationship, fact, opinion, wish, etc. We can avoid the pitfall of identifying the word (and its usual limited associations) with the actual unique situation it represents: we need but be aware of the dangers of objectification, i.e. of evaluating complex dynamic processes as being literally as simple as their verbal representations. Many of the foregoing admonitions are summed up in the general semanticist's golden rule for testing and using verbal symbols: Language should bear the same relationship to facts as an accurate map bears to the territory it is made to represent. (The map is not the territory; it leaves out details and never tells 'all' about the territory; it is one of an indefinite number of charts and types of charts that can be drawn of the 'same' territory, etc. Similarly with verbal representations.) This precept can help the individual then in evaluating utterances properly and in employing language with an understanding of its nature and limitations.

There are, of course, a large number of other general and important semantic principles in addition to the few which have been rather sketchily described above. (Some of these are treated in other contributions to this volume.) Moreover, it should be noted, the present discussion of language reflects the point of view of the general semanticist⁵—adopted because of its far-reaching implications for many areas of living.

ploration of 'semantics' will find excellent treatments of some aspects of the subject and useful illustrative class exercises in the volumes below: Committee on the Function of English in General Education for the Commission on Secondary School Curriculum, *Language in General Education* (New York: D. Appleton-Century, 1940); I. A. Richards, *Interpretation in Teaching* (New York: Harcourt, Brace and Co., 1938); Hugh R. Walpole, *Semantics* (New York: W. W. Norton and Co., Inc., 1941).

⁵The general semanticist may be described as the twentieth century specialist who studies the effects of the linguistic environment upon human nervous systems and behavior. Philosophers of all times have been interested in the relation of language to thinking and action, but only in the last quarter century have Korzybski, Carnap, Britton, C. W. Morris, I. A. Richards, C. K. Ogden, and others explored this field so thoroughly, systematically and fruitfully as to make 'semantics' a new and vital discipline. These men represent various 'schools' of semantics (there are several as there are of philosophy); some are more comprehensive and perhaps more valid and useful than others, although all have made valuable contributions.

Some applications to the teaching of reading are set forth in the remainder of this paper. Semantic considerations such as we have been examining are employed, and perhaps clarified, in the following appraisal of several prevalent procedures in reading instruction.

INITIAL READING INSTRUCTION AS THE SEMANTICIST SEES IT

Instruction in how to read print usually begins upon the child's entrance to the first grade in his sixth year. Here we commonly witness an unfortunate reversal of the natural order in which the learning of the word symbols should take place. From early infancy children associate recurring noises with correlative events that have an immediate significance, satisfying, stimulating, or thwarting their physiological needs. In this life-setting, they learn quickly and easily to employ many different words and to manipulate language in attaining desired ends. Significant experiences characteristically precede the acquisition of their symbolic representations; or more accurately, in a complex 'meaningful' situation some component emerges as the symbol for the total event. But primary-grade teachers commonly are obsessed with the importance of *verbal* mastery as an end in itself. They utter sounds, make marks on cards and blackboards, and then point to objects—or worse, pictures—which the words are supposed to represent. And the child is expected to follow suit, parroting the sounds he has heard his teacher make after exposing certain little black or white markings on a card or blackboard.

Now this process differs in several important respects from the pre-school life situation in which words have previously been learned. First, a felt need or a convincing reason for learning new words and the written or printed forms of both new and familiar words is usually absent. Parenthetically, it may be noted that the child at this stage in school has his language development sharply curtailed by a 'reading' program which restricts—ration—s—the number of new words that may be learned; most of his time is spent in memorizing the written symbols for simple words he already knows. Without the catalyst of motivation and its corollary, intelligent attention, children find it difficult to weld the link between symbol and what it represents—to relate the verbal level with the level of life facts or values. Today, after hearing the word and seeing the printed symbol a youngster will glibly say 'cat'. Tomorrow, when confronted by the same printed symbol, he may say 'dog', unabashed. In desperation the teacher resorts to drill, to the repetition of the exercise, in the vain hope that mechanical verbalization will insure 'word mastery'. Thus do children learn (or are trained) to respond to words the way monkeys, dogs, horses, and other circus animals can be trained to respond to signals—automatically, unreflectively, rigidly.

Through this type of conditioning the child learns to identify and confuse words with some of the life facts for which they stand; he learns to objectify all words, and to invoke single, limited images or notions in response to word stimuli. In his later reading this tendency leads to many misinterpretations. For words have multiple *values* and their *appropriate interpretation* for anyone at any given time and place must take into account their total context or setting. A good reader is aware of this fact; he is therefore alert to cues that will help him elicit from *his* background of experience the most appropriate 'meaning' for a term. He is self-critical, sensitive,

and quick to revise the accent, emphasis, or 'meaning' which he attributes to any word or words, in the light of their total context.

On the other hand, again, the school setting in which prescribed words are to be learned provides but a barren context, and meager motivation. Home and playground from which the child has come, usually abound with sensory stimuli and provide variegated and dynamic settings that are conducive to symbol learning. Such situations bristle with interest-compelling forces; outside the child's skin there is animation, color, movement; inside there is a warm, happy feeling. A child playing with a fuzzy little bundle of fur—kitten, puppy, rabbit, etc.—readily learns to call it by its appropriate name in the presence or absence of the object. Not only does he learn the accepted label, he learns how to *use* it. The label is part of a larger language unit (verbal context) and part of an even larger life activity (or physical context). His satisfactions come from his increased mastery in manipulating and controlling his environment both directly and symbolically.

In many classrooms the word is torn from most of its living context; its relevance to the child's experience and needs is lost; it is thus drained of 'meaning' (life value) on the one hand and on the other charged with a certain unfortunate type of affective content. Mastery of the word is recognized, unconsciously, by the child as necessary for maintaining his status and security. In difficult situations all kinds of stratagems are employed to 'get by'; when the task is impossible the child develops feelings of inferiority, and attitudes of dislike and disdain or of fear for the linguistic paraphernalia and ritual of the school. Indeed, the functional illiteracy of the vast majority of our people, i.e. their reluctance and inability to read comprehendingly and discriminatingly the books, monographs, reports, etc., necessary to understand our crucial economic, political, and social problems, may be traced partly to an infelicitous mode of reading and language instruction which has its inception in the first grade.⁶

READING-READINESS TESTS AND PRACTICES

Recognizing at last the futility of teaching many children how to read books in the typical first-grade program, teachers have formed the notion that these youngsters are not 'ready' as yet for this activity and have differentiated this group sharply from those children who show more aptitude and maturity. So-called 'reading-readiness' tests have aided in making this rather arbitrary division. Improperly and unwholesomely segregated groups have resulted from this false-to-fact dichotomization and objectification in 'thinking' by teachers about a complex, developmental process. Hailed as a panacea for the cure of the first-grade malady, reading-readiness tests and pre-reading classes have in many instances served merely to perpetuate anew the 'primary-education fetish'.⁷

It is easy to recognize the semantic naïveté—inadequacy of evaluation—involved in the foregoing practices. A consideration of the term *reading* may illustrate this point. As used by many teachers, it has served to obscure the varied manifestations and mul-

⁶ Paul Witty and David Kopel, *Reading and the Educative Process* (Boston: Ginn and Co., 1939), Ch. I and VI.

⁷ John Dewey, 'The Primary-Education Fetish,' *Forum*, XXV (1898), 315-328.

multiple levels of the activity. Teachers have objectified reading by identifying it with the interpretation of continuous discourse in books, journals, etc. (This skill is rarely developed to any useful extent in children below the age of eight or nine—nor is it needed by these youngsters.) By so doing, teachers (and parents) have blinded themselves to the many important but rudimentary reading activities in which many children in 'good' homes engage long before they enter school. Such activities include: handling and opening books; turning pages from left to right; looking at pictures and captions; finding oft-heard stories in familiar volumes; pronouncing familiar letters and words in print; and interpreting with some adequacy the 'meaning' of small but sequential groups of these elements.⁸

Reading, in this broad but helpful sense, begins early in infancy. Children learn to read as they learn to talk: exercising and giving expression to a psycho-biological function in the conventional forms and patterns used by the social groups to which they belong. Children appear to learn most efficiently if competent guidance is provided at the time when their exploration of the mysteries of printed forms leads them to seek new skills for the manipulation and understanding of these forms. The reading activities of the first grade should serve to extend rather than to interrupt the chain of experiences in the child's life at the time he enters school. And he should learn new skills in reading naturally and functionally as they are needed to carry on and to share his individual and group enterprises.

READING ABILITY AS A FUNCTION OF STANDARDIZED READING TESTS

The definition of reading among educators has undergone a series of decisive evolutionary changes. From the extremely narrow and mechanistic view that reading is a visual and receptive process involving little more than a rather passive recognition of symbols or a consecutive calling of words on a printed page, we have progressed to the more adequate and dynamic interpretation of reading as an active, discriminative, purposeful, and creative activity through which we reorganize 'meanings', gain understandings, and acquire knowledges. We now view reading as a constant association between the reader's experiences and word symbols and we perceive that the benefits accruing from this interrelationship are in proportion to the richness and accessibility of the accumulated experiential background of the reader. Reading ability is seen to encompass the power to 'think' critically; skill in discovering relationships and establishing appropriate associations; the habit of weighing evidence and formulating relevant judgments; dexterity in locating reading materials pertinent to individual needs; and facility in adapting reading techniques to different purposes.

Verbal allegiance to the foregoing characterization of the reading process can readily be elicited from most teachers today. However, many of their practices appear to be direct violations of their theoretical position. For example, as a measure of reading ability they rely almost completely upon standardized reading tests. These instruments represent so great an over-simplification of the reading process as to render them absurdly inadequate for the measurement of reading performance. Clinical observations

⁸ Frank T. Wilson and I. C. Sartorius, 'Early Progress in Reading: Not Reading Readiness,' *Teachers College Record*, XL (1939), 685-694; David Kopel, 'Reading Readiness: Its Determination and Use,' *Teachers College Journal*, XIII (1942) 64-70.

and experimental evidence support this statement. For example, a study made by Roma Gans⁹ showed that children who received high scores on standardized reading tests are not necessarily 'good' readers in actual reading situations. Despite superior ratings on the 'comprehension' section of standardized tests many children were found in this investigation to display a disconcerting gullibility and lack of critical discrimination in the *selection* and *use* of reading materials.

Standardized reading tests have been criticized above for several reasons. Although they are widely used, they embody a point of view about reading which was obsolete a generation ago; nevertheless, test results are assumed by many educators to reflect the reading achievement of children and the success of their teachers; deliberately as well as unconsciously, teachers' procedures are influenced by the standards set up by tests; inevitably children's reading opportunities are restricted to the cultivation of a series of narrow skills (sampled in tests) of limited value years ago but which in the complex, war-torn world of 1942 spell functional illiteracy. The injudicious use of tests then is a potent, although infrequently cited, factor in stunting the reading ability and dulling the evaluational skill of our population.

THE SEMANTICS OF THE TESTS

In the construction and use of both standardized reading achievement tests and 'readiness' tests, semantic errors similar to those just noted and other fallacies are present. Reading ability or 'reading-readiness', as the case may be, is objectified or reified. Because so many important aspects of reading are ignored in most tests, they provide inadequate representations (and, semantically speaking, misleading high order abstractions) of the reading act. However, these crude devices for appraising reading skill are identified by teachers with the functional *processes* to which they refer, simply because they bear the label *test*, and a test is assumed to be a measure of whatever its title suggestively purports to measure. But as we have seen, there is little correspondence between the structure of most tests and the structure of the proficient reading act, or to use the familiar Korzybskian analogy, between the map and its territory: it is not surprising then that a great deal of teachers' instructional 'driving' follows a rough bumpy road and often winds up in a blind alley.

CONCLUSIONS

In this paper the writer has been critical of a number of prevailing practices and accepted notions that are influential in determining the outcomes of reading instruction. An attempt has been made to disclose usually hidden and unconscious assumptions about the nature, measurement, and guidance of reading. Insights gained from general semantics have been used in this analysis insofar as they contribute to an understanding of certain barriers now present in most schools which impede the development of adequate reading proficiency and intelligence in our children. It appears that a 'semantic sophistication' on the part of teachers will lead them to reject or to modify many of

⁹ Roma Gans, *A Study of Critical Reading Comprehension in the Intermediate Grades*, (New York: Bureau of Publications, Teachers College, Columbia University, 1940), pp. 1-131.

their present unsatisfactory and unsound procedures. In addition, it should be emphasized that a knowledge of general semantics can aid teachers (and parents) positively in promoting the language and evaluational growth of children.

Several reports describing the use of semantic procedures at various levels of reading instruction have already appeared.¹⁰ Space does not permit further discussion of the place of general semantics in the teaching of reading. The writer must rest content to assert that the principles of general semantics should permeate the language and behavior of all adults who guide children's development. Simultaneously with the child's acquisition of his first word he can and should be taught, for example (in language appropriate to the child at this level), that a word is not the thing to which it refers, that words never say all, that verbal symbols are sometimes faulty guides to 'reality', etc. Some of the other extensional devices of general semantics, such as attaching dates and index numbers to words and statements—which are helpful in suggesting the dynamic quality of the happenings represented by static symbols—can also be introduced to the child somewhat later but long before he enters school.¹¹

When given this kind of scientific orientation, and a type of individualized instruction based upon the *facts* about child growth, children should progress linguistically at a rate far beyond present expectations. Perhaps the educative process in America may yet become effective in developing a nation, rather than a handful, of people who 'think' critically, read intelligently, speak intelligibly, write clearly, act sanely, etc. They will be needed when the present holocaust is ended, if we are to build a new and better world.

¹⁰ Cf. articles by Paul Diederich in the 1939, and by Madeline Semmelmeier, Ellen Walpole, Hugh Walpole, and I. A. Richards in the 1940, *Proceedings of the Annual Conference on Reading* held at the University of Chicago, edited by W. S. Gray. Additional reports, by Madeline Semmelmeier, O. R. Bontrager, and others will be found in these *Papers from the Second American Congress on General Semantics*. More extended treatments are contained in the five volumes listed in footnote 4.

¹¹ These devices are described by Korzybski, *op. cit.*, Hayakawa, *op. cit.*, and Lee, *op. cit.*

SOME EDUCATIONAL IMPLICATIONS DERIVED FROM SCIENCE AND SANITY*

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In the work of which I have charge at the University of Washington the aims are to study educational procedures, diagnose their faults and imperfections, suggest remedies and means of preventing similar maladjustments hereafter. In our efforts to achieve these aims Korzybski's *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* has been a rich source of inspiration. The purpose of this paper is to indicate in a very general way the nature and type of help that we have derived. First of all it was necessary to acquaint our teachers with portions of *Science and Sanity*. This was done in classes held in various local centers after regular school hours. The members of each class purchased copies of *Science and Sanity* and we began by reading it together in reading-circle fashion. Later when our textbook was out of print for some time, the material was presented in syllabus form as a basis of discussion. The results were most encouraging in two ways. The teachers were able to carry many of the suggestions into actual use with their pupils. Equally important perhaps was the effect upon the orientations of the teachers themselves. It was not unusual toward the end of a twelve-week study period to have some teacher point out another and say, 'That is not the same person as the one who started in this class.'

The outstanding educational implications as we have become conscious of them are the following:

1. TIME-BINDING. When the children are looked upon as members of a 'time-binding class of life' their teachers are quick to see that they (the teachers) are the leaders whose function it is to assist children toward the performance of their chief function as human beings. This 'idea' greatly enhances the self-appraisal of the teacher. She feels that she has an all-important work to do in the world. The net result is a heightened satisfaction and genuine happiness in her chosen work. In view of the fact that most of our teachers, because of what amounts to enforced celibacy, are denied much that constitutes a complete life, the semantic benefits are enormous.

* In this paper the author emphasizes several aspects of non-aristotelian methodology which have been neglected, at least explicitly, in reports on applications in education, and which call for more attention in the future. Of particular interest are his observations on problems of intelligence and adjustment from the standpoint of the blockages produced by the subject-predicate (symmetrical) structure of our ordinary language and the necessity of developing materials for the training in asymmetrical relations which he suggests. Unlike most of the authors reporting on applications of the methodology, Professor Osburn has not attended seminars at the Institute, and his work in general semantics is derived from independent study of Korzybski's books. For this reason I have edited very little his adaptations of general semantics terminology or use of elementalistic terms such as *idea*, *concept*, *thought*, except to enclose them in quotation marks. See my introductory remarks on the editing of the papers.—*Editor*

2. SEMANTIC BLOCKAGES. We are beset with a graded school system which does not correspond with reality on the 'objective' level. Children cannot be classified intelligently into any set divisions. Some children mature later than others. At the age of six only about 75 per cent of them seem to be 'ready' to learn to read. Lack of 'readiness' for number work is even more pronounced in the third grade. Yet every child must submit to the same instruction at the same time. At the end of the year the school is generally forced to promote practically all pupils whether they are ready for it or not. As a result large numbers of children do not develop 'readiness for beginning reading' until they arrive at the third grade and there the teacher has no time and often little preparation to teach beginning reading. In the past such a condition has resulted in a situation of hopelessness for all concerned. The unfortunate children are labeled 'nuts' and consequently identify themselves as 'nuts'. They are often segregated into what are called 'opportunity' rooms by school authorities. But this deceives no one. Inevitably, in accordance with ancient and false-to-fact identification, school people have tended to act as if these pupils have 'empty heads'.

The truth, of course, is far to the contrary. Each of these children has a brain and in most cases its growth and development is simply 'blocked.' A growing realization of this furnishes strong hope where until now there has been black despair. We are now engaged in a study of these blockages. There are a number of kinds but the most widespread and deadly one is *fear*—lack of morale. In the language of the pupil, the retarded child is 'licked'. He has no hope and no self-confidence. We have achieved very encouraging results on every occasion in which we have been able to free a child from this fear.

3. CONSCIOUSNESS OF ABSTRACTING. Our efforts in this area have been confined largely to the verbal levels. The predominant form of exercise has been the presentation of a group of words like the following: *music, education, orchestra, pencil, college*. The pupil is required to cross out the word that does not belong and tell why he crossed out that particular word. Any answer is correct if the pupil can defend it successfully. For example, in the above case the pupil may cross out *pencil* because we can get an education from a college and music from an orchestra, or he may cross out *education* because we use a pencil in college and music (sheet music) in an orchestra. An important thing is the fact that the pupil is kinaesthetically abstracting when he crosses out a word. When he gives his reason we believe that he is made conscious of the process of abstracting. In the kindergarten, we use pictures or actual objects instead of words. We have developed exercises of a similar sort for every grade level from kindergarten to grade ten. We are also using these exercises with retarded students at the University of Washington and it is both interesting and shocking to find that we often have to go as far back as the sixth grade level before the students know enough of the word 'meanings' to carry on with any degree of facility. After a short experience with this sort of exercise the pupils invariably begin to receive better marks from their instructors and are able to make much better showings on group intelligence tests. We derive some encouragement from the rising opposition of those professional 'I.Q.-sters' who claim with considerable 'emotion' that 'intelligence cannot be increased'. We recalled that the Massachusetts

Medical Association responded in a similar manner when they first heard of the use of anaesthesia in surgery.

4. NON-SUBJECT-PREDICATE LANGUAGE. Our language, as developed from antiquity, and consequent primitive notions of the structure of the world, is of the subject-predicate form. Its chief forms are 'the rose is red' and 'Bill is a pig'. Practically all of our primers and early reading books are written in such language. But when the child reaches the subject of subtraction he meets, without warning, a totally different form of representation, that is, a language of the non-subject-predicate type. This is a language made up of relationships other than those of 'identity', 'qualities', 'properties', etc., and which are mostly of the asymmetrical sort. These asymmetrical relations are mostly entirely new to the child. As a result we have high fatality in arithmetic and wide-spread 'inferiority complexes' among adults toward mathematics. We are just beginning to get a glimpse of the blockages arising from the subject-predicate structure of language not only in terms of fear but also in sheer blockage of 'thought'. The effects of using a language that does not correspond in structure to the structure of 'objective' reality is much like the Roman number system. Both make further progress almost impossible. For example, try your hand on this long division example $LXVII \overline{) MDCXXXVIII}$. Of course long division with the Roman number system was and is utterly impossible. In like manner there is reason to believe that equally great blockage to 'thought' occurs among those who have been conditioned by the subject-predicate forms of representation. Our most urgent immediate task is to develop an understanding of non-subject-predicate language and asymmetrical relations among our children and teachers.

5. CHARACTER MALADJUSTMENTS. The child who is blocked in his school work is unhappy. If he is an extrovert he becomes a 'smart aleck', a bully, or a restless nuisance in the class room. If he is an introvert he becomes reserved, shy and even more unhappy than the extrovert. Being denied a legitimate avenue of self-realization the pupil often seeks such illegitimate avenues as stealing, lying, swearing and other undesirable forms of behavior. We have found again and again that many such maladjustments disappear as soon as the child has found one legitimate activity that he can perform reasonably well and thus win the approval of his mates. This semantic factor refutes again the old doctrine of 'total depravity'. Could it be possible that most 'bad' children are really suffering from some semantic blockage?

6. LANGUAGE AS A MAP. We have as yet failed to profit appreciably from the 'verbal-splitting' notion but the principle of *multiordinality* has been a great help to both teachers and pupils. It relieves for them the bewilderment which results when 'some say one thing and some say another' about a subject under discussion. It also relieves the 'emotional' tension that is likely to arise when multiordinal terms are being discussed. The benefits from the 'concept' that some words are just 'noises' are even more encouraging. Hayakawa's 'snarl-words' are particularly helpful. We seek to get over the 'idea' that when one boy calls another a liar (or worse) that the statement is not one which affords information but only a 'snarl' meaning 'I don't like you!' According to the code of boyhood one is compelled to fight if called certain malodorous names. But one is not compelled to fight everyone who dislikes him. The 'snarl' notion promises to become a powerful semantic tool.

7. SEMANTIC REACTIONS. Semantics is closely allied to what educators call 'readiness'. Much work has been done on 'readiness'. The notion of promoting appropriate semantic reactions is operating toward a strong enrichment of what we have called readiness. Based on the pattern given in Korzybski's 'Semantics of the Differential Calculus' (Chapter xxxii) we are developing the semantics of subtraction, multiplication, division, fractions and ratio. Similar work is badly needed for algebra, geometry and physics. Most of the language of these subjects is of the non-subject-predicate type and hence unfamiliar to the pupils. Beginning in the kindergarten we have provided generous experiences in such patterns as x is greater than y , x is less than y , x is the opposite of y , x is a part of y , x grows out of y , $y = f(x)$ and others.

The foregoing has been only a brief outline of what we have been doing as a result of our study of *Science and Sanity*. I could easily fill in many more details but it seems better to present a few case descriptions of work with pupils and some statements from the teachers themselves.

CASE DESCRIPTIONS OF PUPILS

CASE A was an overgrown colored girl, aged sixteen, in the eighth grade. Her 'I.Q.' at the beginning of the year was 67 and she was hopelessly blocked in arithmetic. Since it was necessary for 'reasons of avoidrupois' to get her out of the eighth grade at the end of the year we decided to ignore her arithmetic and do all that we could to help her in reading. During the rest of the year we gave her a number of exercises which involved training in non-subject-predicate language. At the end of the year along with her class she took another 'intelligence' test and achieved an 'I.Q.' of 98. This seemed strange but no one paid much attention because we were all at this time still suffering from the blockage which results from the 'idea' that the 'I.Q.' just has to remain constant. A was allowed to graduate and so slipped from our view. Six months later I inquired what had become of her. Imagine our surprise when we learned that she was making B's and C's in a nearby high school—a school noted for its rigor and one which under no circumstances could be accused of handing out complimentary grades to any pupil and least of all to an overgrown colored girl. The girl maintained her standing until she left school to be married. She is still married to the same boy and apparently happy. She has three brothers. One who also took our training is doing well in high school; the other two are in the reform school.

CASE B was a boy in the fourth grade who could not read a word. He happened to be placed in the class of a teacher who was taking work with me. The first thing we did was to assure the boy, with all possible emphasis, that he *could* learn to read if he really wanted to and if he was willing to spend fifteen minutes a day outside of school hours with his teacher. In addition to changing his semantic reactions to the reading situation, we used the Fernald kinaesthetic technique with him, and the blockage in his visual imagery was removed.* Before the end of the year he was

* G. M. Fernald and H. Keller, 'Effect of Kinaesthetic Factors in the Development of Word Recognition in the Case of Non-Readers,' *Journal of Educational Research*, IV (1921), 355-357.

taking two books at a time from the library. When the librarian asked him why he always took two books he replied, 'When I get tired reading one I take up the other one. When I get tired of it I go back to the first one again'. This boy even took a book to baseball games with him and read during the dull moments of the game. Now, four years later, B is proceeding happily with his regular class and this teacher who taught him to read looks upon her experience with that boy as the triumph of her career.

CASE C: Early last fall a principal who was studying *Science and Sanity* with me reported that he had a pupil who continually played truant from school and who was afflicted with nausea. It developed that some time before some pupil had called him a 'puke' in the hearing of a number of other boys. He resented the name strongly whereupon all of the boys called him that, to him, most disgusting name. Then his nausea began. His parents took him to a physician who could discover nothing wrong with the boy's diet, digestion, etc. I suspected a semantic disturbance. I suggested that the principal explain to this boy that there is a whole state full of people who are called 'pukes'; that I, his principal's teacher, came from this state [Missouri—*Editor*] and was therefore sometimes called by that name. It then turned out that the principal's parents had also come from that state and gone under that name. The next step was to get these facts over to the boy as vividly as possible. For the next few days C came to school each morning but ran away again. Finally, however, the principal got hold of the boy for an interview. He explained that the 'disagreeable' word had more than one 'meaning' and that there are a number of very fine people who are called 'pukes'. The effect was instantaneous. The boy acted as if a great burden had rolled from his shoulders and a smile came over his face. His nausea disappeared and there was no more running away from school. Of course the principal had also explained the situation to the rest of the pupils and asked them to co-operate by refraining from calling C by that particular name. They not only responded to this request but at their first opportunity elected the erstwhile 'pariah' as president of their student body. Now, six months later, C is completely adjusted and happy in his school surroundings.

CASE D was an adolescent boy, unhappy, maladjusted, and making no progress at all in his work. After trying the ordinary remedial procedures without success his teacher decided to visit the boy's home. There she found the cause of the trouble. The father of the family was having incestuous relations with the boy's sister. The community at once put the father where he belonged and the boy immediately began to progress in his school work. All of his trouble had been due to his profound semantic up-set.

CASE E had been in adjustment rooms for years. Each adjustment teacher had been able to get rid of him in two years by sending him on to another teacher. At last he reached the highest level adjustment room in which the teacher would be compelled to keep him permanently. The teacher was in one of my classes and was greatly worried over this prospect. In this case, I interviewed the boy personally. I discovered that he had suffered from a birth injury. Several years before E had been taken to a psychological clinic for examination and while there he had accidentally heard someone remark that there was 'something wrong with his head'. He

had taken this statement too literally and had brooded over his interpretation of it for several years. I gave him an 'intelligence test' and made sure that there was nothing seriously 'wrong with his head', functionally. I told him this with all of the emphasis and assurance that I could command. I also discovered that he was interested in modeling statues of soldiers. When E went back to his room I suggested that his teacher permit him to model a collection of soldiers for exhibit. The boy went to work and did a good job. His school mates expressed approval of his work, an experience which he had not had before. His improvement is reported as sure and steady.

These cases and others like them seem to indicate that: (1) the semantics of maladjusted individuals offers a fruitful field for further study; (2) a single 'idea' may operate as a powerful blockage; (3) such 'ideas' may be semantically neutralized by introducing other counteracting 'ideas'.

STATEMENTS FROM TEACHERS

At the close of each course based on *Science and Sanity* I have asked the members of the class to express their reactions to the work. I have insisted that their class standing would in no way be affected if they wished to give adverse criticism. I did this to find out what the teachers 'thought' about the work and to test their understanding of Korzybski's point of view. The following are a few excerpts from the returns:

A. 'Having always had a natural aversion to the generally accepted concept that man is an animal, it is very satisfying to me to find someone who challenges it. . . . The idea that man is a time-binder is distinctly unique but it nevertheless opens up a new field of thought destined to promote man to greater improvement of himself, greater achievement and greater well-being as soon as it becomes sufficiently well known to be generally accepted. . . . The limitations, restrictions and false notions that result from the subject-predicate language must give people the feeling that *something is wrong somewhere*. . . . The non-aristotelian system of education which deliberately trains the "mind" to discern differences, similarities, structure, relationships, interrelationships, and the ever extending possibilities of learning seems a very reasonable and direct method of freeing the intelligence from the confining effect of subject-predicate language. . . . There is the idea of the *thalamus* and the *cortex*. Personally this is a great boon to me. When frightened, angered, over-anxious or disturbed one way or another I can [so to speak] lift these emotions out of the thalamus into the cortex and there view them objectively and return them to the thalamus properly balanced and repaired. This gives one something constructive to do with the negative forces which beset human beings.'

B. 'I wish to say in all sincerity that this has been the most interesting and profitable course that I have ever taken. What it has done for me, personally, would be difficult to measure. It has given me an entirely new viewpoint on my shortcomings and has been a real inspiration. How I wish my parents had attended a similar course! They, while having the best of intentions for their children, contributed largely to building numerous blockages which have been very difficult (in some cases impossible) to eradicate. The course has given me much needed assurance that these things are not as serious as they have seemed and that the confidence and encouragement of others is a definite factor in the success and happiness of anyone.'

C. 'The conception of man as a time-binder seems to be a sound approach. Man's function is to contribute to human culture. Herein lies my purpose as a

teacher. I must help each child to find out what he can do best in the world that will be a contribution to human progress. . . . I know from experience that I would have been a better time-binder if I had been helped to do what I wanted to do. "No nice girl does that," was the excuse given. Such an excuse in itself illustrates the verbalistic bonds to which we are bound. . . . Korzybski's outline of non-aristotelian training is worth trying. I hope the day will come when we can have such training in our schools, because the elimination of these animalistic blockages is fundamental for sanity. I feel that I have only begun myself. I am looking at this world of language from a new viewpoint. I am trying to canvass my thalamic region for unsound beliefs. I am trying to utilize opportunities at school to talk about these ideas on the level of my pupils. Most of all I think I am going to be a better teacher and a better person for having had the opportunity to hear about these things.'

D. ' . . . I have had a burden on my heart throughout the class. It just seems that during each class I would like to have said something in defense of the Bible and its teaching, the most precious reality in my life, but I am the type of person who cannot speak up. . . . People can influence our lives in one way or another, but cannot change our nature. No human being can basically change the life of another. . . . The Christ of the cross is the only one that has the power to do that when he becomes the Lord and Savior of your life. . . . Korzybski would have us believe that the teaching of the body *and* soul has failed because the world is in such turmoil. [I am afraid I was the author of that 'idea' in regard to the 'split-concept.'—*W.J.O.*] He is right in the latter but wrong in the former. Christ cannot fail. . . . I also wish to say I believe with all my heart that a child is born in iniquity and conceived in sin (Psalms 51:5). If that verse could be proven false, the whole Bible could be equally false. It must be all or none to retain its power.*

E. 'Maurice was continually losing his temper and swearing. During my talk with him this fall he decided that he was acting like a tiger. The children report that they haven't heard him swear since. . . . This course has helped me personally. I have always hesitated to ask questions or express my opinion because I feared that people might laugh at me. As a child I was unable to carry a tune and I was constantly told that I was singing wrong or was off pitch. I never overcame that feeling of inferiority and I seldom sing now when among adults. If I do I feel very uncomfortable. . . . I feel that the childish embarrassment has had a very detrimental effect upon my self-expression. I wish I might have had the benefit of this course years ago. . . . I am truly sorry that this course is completed. It has been both inspiring and enjoyable. I hope that I have removed a few of my mental blockages.'

The foregoing are samples of many reactions which I have received from teachers who have taken work with me during the past four years. Excerpt D is the only adverse statement that I have received. The woman who wrote it is quite introverted and I had no inkling of her point of view until I received her paper after the course was over. I present a part of what she had to say because she probably represents a considerable group of people whose reactions are sure to be of interest to us in the future.

* Contrary to the recommendations of several editorial advisers, statement D. is printed here. To us it seems important to face the fact that there are probably many thousands of teachers who approach life from such un-sane premises about human nature as this teacher states. It is all too easy to imagine the maladjustive effects on children exposed to the neuro-semantic environment of classrooms dominated by teachers with such types of semantic reactions, orientations, evaluations, etc.—*Editor*

RE-EDUCATION IN READING

A REPORT OF APPLICATIONS OF GENERAL SEMANTICS IN REMEDIAL WORK IN READING

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If some magical transformation could be produced in men's ways of looking at themselves and their fellows, no inconsiderable part of the evils which now afflict society would vanish away or remedy themselves automatically. . . . As an old Stoic proverb has it, men are tormented by the opinions they have of things, rather than by the things themselves.

So says James Harvey Robinson in *The Mind in the Making*.*

In a recent yearbook on reading, Maude McBroom poses the question, 'Why is the problem of reading instruction so puzzling?' Then she goes on to say that in no other area in the school curriculum has so much research been done.¹ Thousands of words have been printed, and filed in the archives of educational research. Educational institutions almost without exception have courses in the teaching of reading. Literally hundreds of tests and other devices for measuring reading 'ability' or improving it, flood the market. Yet, despite all such evidences of 'progress', writers continue in ever-increasing tempo to call attention to the 'deplorable' state of affairs as regards 'reading'. Pupils fail in school because of 'reading'. 'Reading' tastes of the people at large are at a 'low' level. College students do no 'reading' except what is required. Etc.

It is somewhat disturbing to find that in the midst of all the professional 'heat' that is generated about the 'reading' question there is so little 'light'. No writer on reading methodology, to my knowledge, has ever troubled himself to define 'reading' operationally. Of intensional definitions there is seemingly no end. I recently computed the Intensional Agreement Index of forty-eight definitions of 'reading' as they appear in the current literature, using the method suggested by Johnson.² I find the degree of agreement for 'reading' to be 16 percent of the maximum possible agreement.

Despite such a tremendous divergence in definition in the professional literature in this area, leading 'authorities' continue to add new words to 'reading' glossaries. I find hundreds of words thrown about with reckless abandon. One author tells us 'reading' is done with the eyes, while others speak of 'abstracting thought from the printed page'—or 'apprehending', 'ascertaining', 'assimilating', 'comprehending', 'con-

* James Harvey Robinson, *The Mind in the Making* (New York: Harper and Brothers, 1921), p. 3.

¹ Maude McBroom, 'Desirable Scope of the School Program in Reading,' *Newer Practices in Reading in the Elementary School. Seventeenth Yearbook* (Washington, D. C.: Department of Elementary School Principals, National Education Association, 1938), p. 235.

² See Wendell Johnson, *Language and Speech Hygiene: An Application of General Semantics*, General Semantics Monographs, No. 1 (Chicago: Institute of General Semantics, 1939), pp. 6-9.

structing', 'extracting', 'getting', 'gathering', 'making', 'mastering', 'organizing', 'perusing', 'sensing', 'transforming', 'understanding', etc. They speak of 'chains of ideas', 'concepts', 'span of recognition', 'eye spans', 'perception spans', 'eye-voice spans', 'visual spans', 'memory spans', 'auditory spans', etc.

Were Saint Paul to stand on Mars hill today and survey the mass of verbiage in current 'reading' treatises, he might well exclaim again: 'Ye men of Athens, I perceive that in all things you are too superstitious. For as I passed by, I found an altar with this inscription, TO THE UNKNOWN GOD.'

Almost never do I find diagrams or pictures. I fancy that when it occurs to writers in general that it would be more convincing to supply us with diagrams of the 'get' in 'getting thought from the printed page', etc., that much of the meaningless babble in educational treatises will be eliminated, with consequent benefit to our educational systems and to those who are afflicted with what are labelled *reading problems*.

II

In my diagnosis of 'problem' cases in 'reading', the data which I have been collecting over a period of three years reveal in almost every instance some or all of the factors which I will discuss.

First, there are almost always some identifications on the part of parents, teachers, and the 'remedial' case.

Almost without exception, parents are chagrined over the failure of the child; they talk about a brother or sister who did 'better'; they are critical and fault-finding; they often see in the failure in 'reading' evidences of 'mental' deficiency. In a large majority of cases there is a history of nagging, scorn, unusual punishment, ridicule, etc.

The picture is essentially the same for teachers. It is a rare teacher who does not look upon a 'reading' difficulty as a kind of 'mental' deficiency. Data which I have assembled from 329 teachers indicate that the most frequently mentioned explanations of 'reading difficulties' are these: (1) 'mental' deficiency; (2) lack of 'interest'—'He doesn't want to learn'; (3) 'laziness'; (4) 'stubbornness' or 'cussedness'; (5) mysteries, such as reversals, mirror writing, something 'wrong' with the 'eye-span'; (6) etc.

The 'remedial' case manifests evidences of similar identifications. In virtually one hundred percent of my cases there is marked tension in the reading situation as evidenced by a high pitched voice, 'squirminess', fearfulness, outbursts of crying, facial contortions, 'nervousness', 'timidity', etc.

Frequently there is a record of extreme dislike for school with truancy, incorrigibility, etc. In two years I have not encountered a single case where the child did not feel that either a teacher, a parent, or a brother or sister did not 'like' him.

A *second* series of factors, which seem to operate, are certain practices in our educational systems, such as:

1. The belief that there is a *one* correct way of doing a thing. This often leads to a two-valued orientation with respect to any pupil who does not succeed under the stimulus of *the one* way. Consequently, parents and teachers often come to the clinic hoping for a simple answer as to *the best* method. The educational literature is full of similar either-or tendencies. For example, research has sought, and in 1941 is seeking,

answers to such meaningless questions as: 'Which is better, a system of phonics or no phonics?' 'Should pupils vocalize when they read or not?' 'Which is better, the word or the sentence method?' 'Should first teaching of reading be oral or silent?' Etc. In many such instances it would be as much to the point to ask if the ocean is deep or wet. The effect on the pupil of dogmatic answers to such questions is, of course, tragic. Since most, if not all, systems claim to be using *the best* method, the child who does not succeed under *the* system is at fault, or his case is 'puzzling', etc.

2. The system of classifying pupils in a manner false-to-the-uniqueness-of-the-individual. In terms of this system, instruction is invariably directed to a mythical 'average' pupil in the room, to the detriment of the actual individuals.

In most of our schools the entrance age for children is six years. Despite the fact that the thirty pupils in a classroom did not learn to walk, or talk, feed themselves, dress themselves, etc., at the same age, all pupils in the class are commonly subjected to the same reading regimen at the same time.

All are given the same *kind* of book. All are expected to do the same things with the book. Before entering school, no one on Massachusetts Avenue became excited if Mary Jones did not take her first step at the precise instant little Billy Smith took his first step. There were no 'problems' if Mary and Billy did not burst into speech at precisely the same moment on Tuesday morning, April 21. Yet, if under our regimented systems Billy and Mary do not learn to read at the same time, hurried conferences are arranged between papa, mama, and teacher to discuss the 'problem'.

Some years ago I visited the schools in a township in southwestern Pennsylvania in company with the principal. Throughout the day, we were impressed by the groupings of the children in the various classrooms. The practice in this system called for dividing the children in each room into 'good' and 'poor' groups. In virtually every classroom, the majority of the pupils in the 'good' groups were girls, while the boys were chiefly in the 'poor' groups. During a talk to the teachers that evening I mentioned this. One teacher was puzzled. 'I cannot understand why the girls should be "better" than the boys,' she said. 'They were all taught the same.' *Perhaps that is the reason.*

3. An almost universally prescribed system of book instruction from the day the child enters school.

This makes it almost impossible to establish adequate word-fact relationships for many pupils, encourages intensional orientations, and practically excludes extensional training.³ There appears to be a fetishistic belief in almost universal operation, that to learn is to learn from books. Here is reflected the philosophy of 'get' which so completely dominates the reading field today. If reading is 'getting thought' from the printed page, then it follows that printed pages in the hands of children are of first importance.

³ This refers to Korzybski's discussion of intensional and extensional orientations and of word-fact relationships; the criterion of similarity of structure as the standard of adequacy, proper evaluation and so predictability. These have been set forth in his seminars at the Institute of General Semantics and in his book, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941). See pp. 55-101, 133-247, 381, 465, 632, 639.

Keyser in *Thinking about Thinking* says:

Every human mind is a doctrine factory . . . A mind that is too feeble to invent doctrines itself always adopts doctrines invented by others. Consequently, we all of us hold a large variety of doctrines regarding a large variety of subjects. We value them partly as helping us to live well, partly as in a measure gratifying our desire for knowledge of the world, *but mainly as creeds that we are bound to make prevail*. [Italics mine]. To make them prevail we resort to every conceivable means: rational and irrational, savage and civilized, brutal and humane, force, fear, flattery, bribery, threats, ostracism, prayer, preaching, and teaching. Yet most of the doctrines which we thus hold as sacred creeds and solemnly urge upon the world are unintelligible, vague, incoherent, ignorant, shallow, silly—logically rotten.⁴

Viewed in the light of science in 1941 the sponge or absorption theory of reading ('getting thought' from the printed page) becomes so primitive that it might well be regarded as another pre-aristotelian relic. In terms of modern 1941 theory we recognize reading as involving essentially the relating of a map to a territory.⁵ Under our present system, we concern ourselves principally with the maps and forget the territory. As Whitehead aptly puts it, 'In the Garden of Eden, Adam saw the animals before he named them: in the traditional system, children named the animals before they saw them.'⁶ In short, we take children still predominantly extensional and undertake to induct them overnight into a world of predominantly intensional orientations.

I recently completed a brief study which verifies in a striking manner the preoccupation of educators with maps rather than territories in their instructional procedures. In this country, instruction is usually based upon a series of 'readers'—a so-called 'graded' list of books. A child typically 'reads' one or perhaps two books in the series each year that he is in school. Several series now provide four or more books for the work of the first year.

The authors of many of the newer series of 'readers' have written guidebooks in which they set forth at some length descriptions of teaching procedures which they regard as effective. An examination of such a guidebook should reveal some of the unstated assumptions about map-territory relating, etc., upon which the author erects his system of instruction.

I have examined two such guidebooks for instruction for the first year. The basis for the analysis briefly was this: If the reading book used by the pupil contains a story about Jack and the Circus, the appropriate section of the guidebook was analyzed to determine: (a) How many lines in the guidebook were devoted to territory in this connection. For example, if twenty lines in the guidebook described procedures for actually taking children to a circus, etc., then twenty lines were credited to 'territory'. (b) If the guidebook suggested showing pictures of circus animals, tents, clowns, etc., and devoted ten lines to a description of procedures to use in connection with pictures of a circus, then ten lines were credited to pictures. Although non-

⁴Cassius J. Keyser, *Thinking about Thinking* (New York: E. P. Dutton and Co., 1926), pp. 56-57.

⁵This refers to Korzybski's use of the map-territory analogy in presenting the notion of word-fact relationships. See footnote 3.

⁶A. N. Whitehead, *Science and the Modern World* (New York: Macmillan Co., 1931), p. 278.

verbal, pictures are forms of representation, abstractions from the territory-facts and so have some of the same characteristics as maps and other forms of symbolism. As the analysis proceeded, however, such a dearth of contact with actual territory was suggested that pictures were included as a non-verbal classification, in order to 'brighten' an otherwise hopelessly 'dark' situation. (c) If the guidebook devoted thirty lines to a description of procedures to be employed to teach children how to 'sound out' words, recognize words, respond to verbal questions, etc., then thirty lines were credited to maps.

A summary of the analysis follows:

	GUIDEBOOK FOR SERIES A		GUIDEBOOK FOR SERIES B	
	No. Lines	Percent of Total	No. Lines	Percent of Total
Maps	3,079	94	8,025	86
Territory	0	0	111	1
Pictures	174	6	1,114	13
Total	3,273	100	9,250	100

When I tell you that the sales of one of these series of books approaches, if it does not exceed, ten million copies, do you wonder that the experts everywhere are 'excited' because children cannot 'read'? To be perfectly blunt about it, the poor youngster, in most instances, is never given the opportunity to learn.

We set up elaborate schemes to 'add' to the vocabulary of youngsters. We emphasize the importance of finding *the* 'meaning' of a word—always with a dictionary. In short, we provide a diet almost exclusively of word-word relating, and then become 'puzzled' when 'problems' arise in 'reading', which is primarily a matter of word-fact relating. As Semmelmeier⁷ and others have shown, general semantics as a method rectifies some of the errors in our present system, and as a result 'reading problems' as such, are considerably reduced.

4. The practice of allowing maladjusted teachers to remain in charge of children. The very system which results in so much failure for pupils, also indirectly contributes to the maladjustment of teachers.

Teachers often have little voice in the determination of classroom methods, policies, or materials. Too often they operate on ready-made programs handed to them by administrators. I know many schools, for example, where teachers are still required to follow a printed schedule which stipulates the number of pages all children in a room must have read on a given date—an impossible task in any situation.

In many communities teachers have no tenure. They hold their positions subject to the whims and caprice of the local barber, garageman, banker, or what not. Marriage, smoking, dancing, etc., are often causes for dismissal. So widespread is the influence of such conditions that Ryan commented in his Commonwealth Fund report that simple

⁷ Madeline Semmelmeier, 'Evaluation of the Application of General Semantics Methodology in a Reading Readiness Program,' in this volume. See also her paper, 'Promoting Readiness for Reading and for Growth in the Interpretation of Meaning,' *Reading and Pupil Development*. Proceedings of the Conference on Reading Held at the University of Chicago, Vol. II (Chicago: University of Chicago Press, 1940).

friendliness on the part of the teacher was found in strikingly few of the classrooms he visited.⁸

A *third* factor, which I commonly find in my analysis of reading problems, has been designated by Johnson as *diagnosogenic*.⁹ In a large majority of my cases no one ever guessed that the case was anything other than a 'normal' individual until some 'reading difficulty' was said to be present. Mysteries are then invoked by the educators to explain the difficulty. Mothers read articles about 'reversals', 'word-blindness', 'eye-movements', 'attention-span', etc., and come to the clinic prepared to name the demons with which little Willie is afflicted. I interview mother, teacher and child individually, and in their responses to my question, 'What do you think is the difficulty?' they parrot the same mysteries.

III

The remedial program often has to be three-fold. It involves literally the re-education of parents, teacher, and child. In this connection, I find general semantics indispensable.

The most difficult task in the program of re-education is to convince the child that he *can do it*. One approach which I have found successful with the 'non-reader' is to show him a pencil, asking him at the same time, 'What do you call this?' He answers, 'Pencil.' Perhaps I then ask, 'How did you learn that?' He answers, 'I heard some one call it a pencil.' Then I write the word *pencil*. I may say, 'Here I have written what you called it. Can you remember how this looks and what you call it?' Often I get this astonished reply, 'Oh, is *that* all there is to it!' All I have done in this case is to make clear the relationship between word and fact—map and territory.

In other cases this task is not so easy. It often happens with acute 'problem' cases that the reactions in a reading situation have become almost as unconditional and automatic as the typical person's reaction to a snake, for example. Here the technique of using indexes and dates, provided by general semantics, becomes particularly valuable. In such cases I often do not attack 'reading' directly at all.

Sometimes I show the subject a simple visual form—a square, for example. I permit him to look at it long enough so that he may carefully observe it. Then I ask him to find this figure exposed in a group of other similar figures. After he succeeds with this and other simple forms like triangles, circles, ellipses, right angles, stars, etc., a transition is made to numbers or words. Once I succeed by this or similar means into literally 'tricking' him into a successful performance, he has convinced himself. The rest is comparatively easy.

As soon as the subject succeeds in understanding the nature of 'reading', as here indicated, I permit no disjunctive saying of words. Under our present system with its emphasis upon parrot-like saying of words, it makes no difference to the child if he 'reads' the expression 'I saw the tree' as 'I *was* the tree.' In either case he has parroted words. However, when he has become aware that the map represents a territory he has

⁸ W. Carson Ryan, *Mental Health through Education* (New York: The Commonwealth Fund, 1938), p. 31.

⁹ See Wendell Johnson, *op. cit.*, p. 39.

a system of evaluation which prohibits his 'reading', 'I was the tree.' Consequently, the demon 'reversal' evaporates.

IV

It will be recognized that I have dealt here only with a very small category of individuals who are looked upon *by the followers of our elementalistic educational system* as 'reading problems'. It is a category composed of individuals whom we might dub 'those who have not discovered how to follow "tracks" or words.' For in our present state of atomistic 'thinking', saying words, or, following the word 'tracks' verbally, is widely accepted as 'reading'.

Students of general semantics realize that the great society of *homo sapiens* might in a very real sense be regarded as a disorganized, milling horde of 'non-readers', *unaware that the tracks are only tracks and nothing more*—maps for which, all too often, no corresponding territory can be found.

Perhaps we have here a hint of some of the factors which may be responsible for the cultural disintegration of our time. For following these 'tracks', frequently without checking upon the existence or possible non-existence of the territory, are doctors and laymen in quest of the secrets of health; individuals in quest of financial 'security' through proper investment; those in quest of 'spiritual' food; young women in quest of 'personal charm'; economists in quest of a 'sound' fiscal system; educators and distressed parents in search of a solution for a 'reading problem'; the scientist in quest of an enlarged understanding of some aspects of the universe; generals in quest of military 'victory'; negotiators around a table in quest of 'lasting peace'; etc.

And this host of 'non-readers', who in the long reaches of history have followed tracks, unaware with a few notable exceptions that the tracks were only tracks and no more, has left in its wake, and is continuing to erect, gigantic 'monuments'—'monuments' of war and pestilence; of oppression and slavery; of poverty and starvation; of hatred and persecution; of neon lights and billboards and yellow journals; of superstition, ignorance and quackery; of fear, misery, and unhappiness—all told, a colossal 'monument' of cultural disintegration.

To meet this problem, one searches the traditional treatises on reading in vain. Happily, we have at last appropriate preventive and remedial treatment. For one value of general semantics lies significantly in the fact that it provides us with a method of reading; a method of properly evaluating tracks as tracks and no more, until *we relate them to facts*, etc.

What I have described is not magic. I have brought forth no new word for the glossary, nor a new machine for revolutionizing the 'reading' of mankind. There is no need for magic, new words, or machines. Our 'reading problems' arise largely because of our primitive, elementalistic educational system. As we learn to change our methods of evaluation, our ways of looking at our fellows and ourselves, and consequently our ways of 'reading', if you please, many of the 'evils' which afflict us will indeed vanish away.

PART III—*Continued*

Some Neuro-Semantic and Neuro-Linguistic Factors
In the Re-Construction of Education

Section B

NEW ORIENTATIONS IN LITERARY SCHOLARSHIP
IMPLICATIONS OF GENERAL SEMANTICS FOR GRADUATE
SCHOOL TRAINING IN THE HUMANITIES

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Many people at the present time, both within and without the university, are expressing dissatisfaction with the graduate school training which is supposed to prepare a scholar for a life of research and teaching in modern languages, philosophy or English. This criticism comes from many and varied groups, who seem to agree on nothing else except that 'something is wrong with the Humanities.' Perhaps if all this criticism came from people who want only 'practical' as opposed to what they call 'theoretical' courses, or from people who want only 'professional' as opposed to 'cultural' courses, the criticism might be answered by a clear and eloquent statement of the value of theoretical and cultural courses well-conducted. But much of the criticism under discussion comes from men with much subtler schemes of evaluation than these simple dichotomies; and the criticism itself is more important than the attacks sometimes made on English from the limited departmental outlooks of business administration or professional Education. For the question has been insistently asked by English scholars themselves whether, in the normal procedures of our research, our teaching, and our training of young scholars, we have not fallen into a routine, mistaking customary shop-talk for 'truth' about the world, and assuming for our scholarly methods a validity they no longer possess. It is being said with increasing frequency that conventional scholarly methods, applied to literature, grind out results that are marginal or sub-marginal when measured by human or social, rather than by academic, standards.

Briefly, then, many scholars and graduate students are dissatisfied with the curriculum offered to them and the kinds of tasks they are required to perform to gain the degree which has now become an economic necessity. It is felt that the 'field' of English, as defined in the procedures of most graduate schools, is both overcrowded and exhausted of 'real' tasks which bear on the problems of the scholar and of his society. The Marxists and other politically conscious groups have complained that academic scholarship is, at best, socially unfunctional and unrealistic, amounting, most of it, to genteel puttering. John Crowe Ransom feels that, within the traditional assumptions of literary scholarship,

It is almost harder to discover an important problem for further research than, when once it is discovered, to work it out. The younger generation of scholars is restive and discouraged. The older generation scarcely understands how ripe the times are for a revolutionary shift of strategy . . .¹

¹ John Crowe Ransom, 'Strategy for English Studies,' *Southern Review*, VI, 2, 226.

And extra-academic scholars like Edmund Wilson or Kenneth Burke are much more bitter in denunciation. Burke, for instance, says:

When considering the welter of minor investigations that are now taken as the normal output of the academic bureaucracy,—arising from the fact that everybody is expected to codify something or other for his degree, while the disproportionate flow of income acts to support a vast quantity of such low-powered collations,—when considering these stamp collections of an overly proliferating priesthood, I have wondered whether we might legitimately try to introduce some new kind of Occam's Razor, some new test for the exclusion of the non-essential.²

Similar dissatisfaction with the results is expressed also by scholars whose general outlook is more conservative. Norman Foerster and others have recently published a symposium, *Literary Scholarship: Its Aims and Methods*³ a book which, generally speaking, affirms and approves the customary problems and organization of English scholarship, but which nevertheless states:

For more than a decade the opinion has been gaining that our theory of scholarship, while not unsound, has been too limited in its scope. A conviction has been growing that considerable changes will have to be made in the training of scholars of the future. . . . The inclination of literary scholars to move out of rather than move deeply into their own subject is a symptom of a dubious state of affairs in their own subject.⁴

It is not necessary to sample more extensively this literature of dissatisfaction, which ranges from important methodological papers read at recent meetings of the Modern Language Association, through discussions before less august groups, to casual wisecracks by disgruntled graduate students. The discontent exists and is widespread; but, curiously enough, the basis for the discontent has not been carefully studied. Most of the discussions which I have read or heard proceed either to present an ideal of what scholarship 'ought to do' or to lay the blame for its present sorry state on 'science', 'the burden of teaching', or the poor quality of the new crop of students. These methods of developing the problem have obvious 'logical' dangers: both assume that the present state of scholarship is 'sorry' without describing explicitly what the assumptions of that present state are; the first assumes the absolute validity of the values which the ideal plan is supposed to attain; the second is merely a way of throwing up your hands (more or less elegantly or scornfully) and doing nothing to change the state you object to.

Perhaps the basis for the dissatisfactions may be more profitably investigated by attempting to bring to light the series of assumptions concealed in our usual academic evaluations. There is a certain standard of competence which graduate students in the Humanities are supposed to meet. But back of this standard are certain pre-suppositions about 'English', about 'scholarship', about what is 'sound' procedure, about what is an acceptable problem for research. If I say that so-and-so is a 'good' scholar, I am measuring him against some more or less explicit or implicit notion of what constitutes 'good scholarship'. The widespread dissatisfaction would seem to indi-

² Kenneth Burke, 'Semantic and Poetic Meaning,' *Southern Review*, IV, 3, 501.

³ Norman Foerster, et al., *Literary Scholarship: Its Aims and Methods* (Chapel Hill: The University of North Carolina Press, 1941).

⁴ *Ibid.*, pp. v, 217.

cate that the orthodox notion of good scholarship seems to many people in the profession to be rigid and unrealistic.

I am not, of course, speaking of what is ordinarily called 'a low standard', nor am I questioning the solidity and competence of thousands of patient, methodical, and thorough investigators. Granted the validity of the tasks set, the standards demanded and attained in graduate schools of English are high and exacting. During the last fifty years there has been an immense increase in the amount of formal study which is required of a college English teacher. Promotions generally depend upon publication of research work in the recognized professional journals. Despite some evidence that this forced raising of standards has not been altogether healthy, the net result has probably been a generally higher standard of instruction. A vast amount of excellent work has been done in recovering unknown documents, establishing definitive texts, writing biographies and editing textbooks. The passing generation of American scholars may perhaps be excused a certain complacency when they regard their achievements within the self-imposed limits of their 'field'.

Of course, anyone familiar with the professional literature can recall petty and quibbling investigations, academic fads, and unimportant trifles establishing a 'reputation'. But my concern here is not to praise or blame the total of work done within the frame of assumptions of orthodox scholarship, but simply to try to describe what kind of frame of reference this is.

II

Let us look at this conventional scholarship (i.e. the procedures, lectures, books, papers, examinations, etc., which are said to be 'sound' by most members of the profession), to try to see what it is which the criticisms just outlined are directed against.

What are the notions about study and teaching which are implied as background assumptions by the actual practice of academic research? What set of presuppositions concerning the subject-matter and scholarly methods 'proper to' the field is assumed in the procedures to which the critics we have just quoted object? These assumptions may be, in fact often are, unformulated, but they are nevertheless present as a background pattern, and hence determine the setting up of curricula, the evaluating of studies, the passing of candidates, etc. These assumptions are the 'self-evident truths' of conventional graduate schools, presuppositions so deeply rooted in a large number of humanistic scholars that they treat them *as fact* and are unable to deal with researches which begin with any other set of assumptions. Needless to say, I am not labelling these propositions 'true' or 'false', but merely trying to formulate some of the (often silent) 'metaphysical'⁵ postulates of graduate school procedures. Nor do I feel that this list is exhaustive. I simply want to bring out in the open some of the assumptions often implied rather than stated in the usual run of graduate courses and scholarly articles.

⁵ 'There are two things you can do with absolute presuppositions. You can presuppose them, which is what the (working specialist) scientist does; or you can find out what they are, which is what the metaphysician does. . . . Each (absolute metaphysical presupposition) is important, and fundamentally important, because it determines the structure of a science by determining the questions which arise in it, and therefore determining the possible answers.' R. G. Collingwood, *An Essay on Metaphysics* (Oxford: Clarendon Press, 1940), pp. 52-54.

Here is my partial list of what seem to be the usual departmental presuppositions.

A. There is a codified body of information about language and literature, mainly historical information, the minute and detailed knowledge of which it is the graduate student's business to gain.

See the published examinations for the doctor's degree in English in almost any graduate school. Such examinations rarely call for criticism, for understanding of literature or linguistic processes, for discussion of the functional relation of literature to author and reader, etc.; rather they usually ask for handbook information, arbitrary classifications of works, and repetitions of conventional historical judgments. From the doctoral examinations of different institutions, I quote as samples these questions: 'Consider the state of literature in 1660. Name the men of letters, their works and their types and genres.' 'What is the place of King Alfred in English Literature?' 'Discuss the Body and Soul in Middle English Literature, in reference to texts, sources and scholarship.' See also in almost any college catalogue, the list of courses offered by the English department. I will return in section III to the results of this notion of the 'field'.

B. This body of information can be treated as a 'field' and studied with little reference to other, and especially to scientific, disciplines.

I know a man who advises graduate students not to read too much science and psychology because these 'are not, properly speaking, graduate work.' Although there is a considerable lip-service to 'science' and 'scientific method' (see *G* below), there is no obligation on the part of the graduate student to keep abreast of new discoveries or new methods in psychology, mathematics, the physical sciences or even the social sciences (in the study of which a set of assumptions very similar to those here analyzed is also leading to a similar dissatisfaction).⁶

C. The aim of research is to add to, and bring nearer completion, the 'field' of language and literature. 'Language' is the study and charting of the historical occurrence of words; 'literature' is the establishing of texts, variations, relationships to other works, comparisons of commentaries, etc., for all the works thought of as belonging in the 'field'. Classifications of works by *genres*, or (more recently) by similarities of intellectual content⁷ is another aim of research.

D. Every scholar should be an authority upon some one 'period' or individual writer: i.e. he should be familiar with biographical and antiquarian data concerning the *milieu* in which the writer moved, and with the 'departmental literature' of commentary which has grown up around him.

This assumption is reflected in professional slang, in which a scholar is said to be 'a Milton man', 'an eighteenth century man', etc., or to be 'working on the later Wordsworth'. Furthermore, in most graduate schools, every student must choose a 'major field' within the total 'field' of English literature.

E. A literary work can be explained and accounted for in terms of other literary productions which preceded it.

⁶ Cf. Robert S. Lynd, *Knowledge for What?* (Princeton: Princeton University Press, 1939).

⁷ Arthur O. Lovejoy, *The Great Chain of Being* (Cambridge: Harvard University Press, 1936), Ch. I.

Although the notion of 'literary influences' has been under considerable attack, 'source scholarship' still flourishes; and courses are often organized to illustrate 'influences' even when the notion itself is verbally attacked. Literary history, too, normally proceeds on the assumption that the literature it is surveying is an 'entity'; i.e. that the classification set forth is an *actuality*, not merely a device for convenience. The assumption here is that literary history proceeds from work to work, or from writer to writer, not from total context of one work to total context of another, in which the tradition from the former work is only one factor.

F. Linguistic phenomena can be treated without reference to the speech-acts and neuro-semantic reactions of the speakers. 'Language' is one field, 'literature' another, 'speech' still a third; and 'logic' and 'value' are still other, only vaguely related, separate 'fields'.

G. The 'scientific' method is the method of accumulation, whereby more and more 'facts' are added to the accumulating 'subject matter of the field'. The concern of scholars in the humanities is with the documents of literary history.

H. 'Research' and 'teaching' are opposed; they make competing drains on the scholar's time and energy. Subject-matter 'field' courses are more desirable to teach and more important than underclass courses; the value and importance of a teacher's work may be judged by his standing in his 'field' rather than by the number of his students and how he influences them.

This set of assumptions seems to me, with local exceptions and modifications, to be the set which delimits the area of action of conventional English scholarship.

III

Let me repeat that I do not of course state these assumptions with any intention of 'refuting' them, although I myself feel much of the current dissatisfaction with our training and procedures. Metaphysical propositions of this sort underlie action and evaluation, and therefore I do not regard them as 'debatable': They must be judged by their results in action: in productive work, in personal adjustment, in the attitude they lead the scholar to take toward his society and its problems, toward his students, toward himself. On the one hand, how well can the complex phenomena of language and literature be handled by techniques following from and operating within this set of postulates? On the other, does the rigidity and departmental parochialism of this frame account for the social ineffectiveness of most humanistic scholarship? In still another direction, does the same rigidity account for the personal maladjustments (pomposity, intellectual 'showing off', verbalism, etc.) of some scholars and the sometimes violent dissatisfactions found among graduate students? Since scholarship is a trained behavior of scholars, these are all one and the same problem.

It seems to me that the root trouble with this set of assumptions is that language and literature—men speaking together, entertaining and influencing each other, symbolizing and feeling, through empathy, each other's attitudes—is wider and more inclusive than the academic *subject* 'literature' delimited by the assumptions. 'Reality' is not organized like a college catalogue—by departments. The distinction between 'literary' and 'non-literary' behavior in life is not drawn by the same line that it is

in our study: we fail to note how arbitrarily the customary line is drawn. 'Poetry' is neither sub-human nor super-human, but an ordinary daily function of all men, well or ill-performed, deep or shallow in its results. Classifications (genres, types, periods, 'romanticism', 'classicism', unit-ideas, etc.) are not the first-order facts of human speaking, but at most one traditional factor in the total situation in the face of which the utterance—gutter wise-crack or most subtle poem⁸—is made.

To put the matter more technically, the terms, procedures, etc., suggested by this set of assumptions do not reflect accurately the functions actually performed by the language nor the complexity of the literature we propose to study. Since the *documents*, not the reading and writing acts, are the starting-point of research, it is impossible to invent within this frame of reference terms similar in structure to the actual first-order facts themselves.⁹ The organic unity of the language behavior is split by the elementalistic fictions of abstract 'fields' of 'language', 'speech', 'logic', etc. (See *F.*) In other words, much of our productive work has only an 'academic' validity, a 'meaning' only within a specialized frame which distorts and obscures the basic life-facts involved.

There are still other results of the excessive specialization of our graduate school programs of training. By exclusive concentration on an abstract 'field of literature', a scholar becomes a technical expert upon the history of literature. But it is evident that mere specialism by itself, resulting in a special 'knowledge' without adequate evaluation of the general social context in which it is to be used, sometimes works disintegratively. The specialist loses the ability to see extensionally what functions his activity is actually performing in the society, or even in the university, of which he is a part. He comes to judge whatever he reads by how closely it approximates a notion of 'soundness' derived from the assumptions we have just outlined. He can accumulate masses of 'facts' without ever modifying this set of assumptions; from this it follows that he probably will be helpless or, worse still, obstructionist, in dealing with any activity, or any facts, not provided for in the neat and simple chart of his assumptions. This disintegration is also present, though not easy to describe, in the personal life of the specialist himself. He evaluates himself as the 'doctor', the 'authority', the 'one who knows'; but he is also, in general adjustments to the neuro-semantic environment, often naïve, dogmatic, and ready to impose his opinions on others in areas to which his specialized competence does not extend. He behaves, says Ortega, like a spoiled child.¹⁰

⁸ 'Literature is an integral part of the entire culture, tied by a tissue of connections with every other element in the culture; yet possessing a function of its own and ministering best to the life of the group when it performs that function with the greatest activity and deepest congruity with the basic assumptions and accredited purposes of the group. And it should be added, to point the complexity of the relationship, that these basic values are not something given but are the end products of a past in which literature has itself played a substantial part in the process of cultural construction.' Max Lerner and Edwin Mims, Jr., 'Literature', *Encyclopaedia of the Social Sciences* (New York: The Macmillan Co., 1933), IX, p. 524.

⁹ For the importance of structural similarity, see Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Pa.: Science Press Printing Co., 1941), Book I, Ch. xvii.

¹⁰ Jose Ortega y Gasset, *The Revolt of the Masses* (New York: W. W. Norton and Co., 1932), p. 119 ff.

To this same excessive specialization, in part at least, I would also trace the social ineffectiveness of humanistic scholarship. By an ancient tradition, humanistic scholars are supposed to be somehow concerned with the 'cultural heritage', with teaching accuracy and distinction in 'thought' and expression, with interpretation of current art and behavior in terms of wisdom learned from the great utterances of the past, with reinterpretation of past evaluating schemes in the light of new knowledge. But the notion of the 'field' combined with an incomplete and misleading notion of scientific method (see *B* and *G*), relegates all that to side issues with which 'serious' scholars need not be concerned, at least in their professional work.

This problem is very complex: here I can only mention two or three aspects of it. First, there is danger that graduate schools in English are going to lose sight entirely of a more fundamental notion of education: training in the kind of behavior which is indicated by words like 'culture' and 'taste', 'intellectual breadth', 'emotional stability', etc. This danger has been perceived by the 'literary humanists'; but this group, having defined 'Culture' and 'Taste' exclusively in terms of acquaintance with literature, have themselves helped to prevent the realization of less rigid and more useable orientations. It is this group which has insisted upon and popularized the fictional opposition between 'Culture' and 'Science' which is only now being broken down; their attitude (that they must 'defend' an ancient culture against the vulgarities, including 'science', of a degenerate modern age) actively prevents the utilization of new attitudes and new orientations.¹¹

By splitting the study of the organic speaking and writing act into separate 'fields' ('linguistics', 'logic', 'public speaking', 'rhetoric', 'grammar', etc.), and *forgetting that these are abstractions*, we prevent ourselves from contributing to a new synthesis in education and to cultural reconstruction in our time. To give only one example, we strengthen that disastrous separation between the art of manipulating men (propaganda, advertising, etc.), and the art of making adequate statements, which may well destroy the 'good' potentialities of our culture.¹²

I hope that I am not giving the impression of making an unreserved 'attack' upon contemporary literary scholarship and graduate school programs. I certainly do not intend to do so. I would not even deny that work of some value can still be done within the strictly orthodox frame of assumptions, although it seems obvious to me that a point of 'diminishing returns' has been reached. But I do feel that a new orientation is necessary, a synthesis of disciplines now thought of as separate, a modification of our courses, procedures and productions. It should be profoundly disturbing to us as a profession that the immense quantity of 'research' which we have piled up in libraries has not proved 'useable'—i.e. has not influenced in any constructive way even

¹¹ For an acute analysis of this attitude, see Oliver Reiser, *The Promise of Scientific Humanism* (New York: Oskar Piest, 1940), pp. 241-243. Reiser suggests a shift from a literary to a scientific humanism; more learning *from* and less learning *about* literature and art; studying the past with the techniques of the present rather than the present with the attitudes of the past.

¹² Irving J. Lee: *Language Habits in Human Affairs: An Introduction to General Semantics* (New York: Harper and Brothers, 1941). This aspect of the problem is very clearly analyzed in the Preface, especially pp. xvii-xx.

the trend of education within the university, much less general education or the trend of events in our time. Still more disturbing should be the fact that practically all the new light which in the twentieth century has been shed upon fundamentally linguistic problems (our special concern), has been created by men who are not 'respectable' and 'orthodox' in our field and who are labelled anthropologists, mathematicians, physicists, psychologists, etc.¹³

One last observation. Suppose we take an influential book of our time, say Hitler's *Mein Kampf*, and subject it to a series of orthodox analytic researches of the sort suggested by the assumptions we are here discussing. We investigate its 'logic' in one inquiry; its diction, its grammar, the 'ancestry' of its 'ideas', in other inquiries; its resemblances and differences to other biographies or political tracts in still others, etc. Will the sum-total of these split inquiries represent useful knowledge of how this book was written in just the way it was, of its influence, of its significance, of the conditions for its appearance, of how to deal with it? Certainly German scholarship (the best in the world, we have been frequently told) provided no methodology of adequate human evaluation.¹⁴

IV

It is impossible of course to lay out a 'new' program of studies that graduate scholars in the humanities 'ought' to follow. Indeed, the setting up of sharp dichotomies between 'new' and 'old' is a harmful procedure: the task of graduate schools is rather to use more fruitfully the data we have accumulated under former methods. As soon as poetry, art, language, etc., are regarded as functioning activities of men-in-society, new problems and methods of research will be suggested to competent scholars by the details of their interests. If, for instance, we stop treating poetry as an academic 'subject' and begin to investigate how specific poems affect our neuro-semantic reactions, a whole group of functional studies is at once suggested: how a form and a tradition have acted to help create unity in a specific group; how symbolism, rhythm, metaphor, etc., are related to the tensions and patterns of the writer's life; how the writer's orientation toward his audience (other men) has helped shape his product, etc.

First of all it seems to me necessary to transcend the notion that the object of study for graduate students is the 'field' of literature. While it is possible that some scholars will want to confine their studies within the definition of the 'field' now current (see A, B, C, D above), a re-orientation of literary and linguistic studies must

¹³ To mention a few: Korzybski, Carnap, Malinowski, Hogben, Piaget, Veblen, etc. The list is very long, and includes also men from the English field, notably Bloomfield and Richards. I merely want to note that we have not taken the lead in re-orientation. For an interesting, if rather uneven, discussion of wider problems of re-orientation, see the series of eleven articles, 'Books that Changed Our Minds' in *The New Republic*, Jan. 4-June 21, 1939.

¹⁴ Any book, poem, or essay might be taken as illustration; I mention *Mein Kampf* only because there is available a brilliant functional study, written under more realistic assumptions than are most scholarly treatises, which does take account of the larger issues. See Kenneth Burke, *The Philosophy of Literary Form* (Baton Rouge: Louisiana State University Press, 1941), 'The Rhetoric of Hitler's "Battle"', pp. 191-221. Burke, writing to explain facts, not to follow the conventions of an abstract subject 'rhetoric', gives us more understanding of the processes involved, and a thoroughly 'useable' discussion.

consider the frame of assumptions we have been analyzing as a 'limiting case' (in the mathematical sense) rather than as a *norm* to which 'all' scholars 'ought' to conform. I am sure that functional investigations will lead many graduate students in the humanities into areas of study not touched by the customary curriculum of English graduate schools. Their study will have to be controlled by such questions as 'What do I need to know to explain this literary process?' 'What must I understand to teach this particular group of students?' etc. (Too often the controlling questions now are 'What must I know to meet departmental requirements?' 'What must I know to teach this codified *subject-matter*?')

Naturally, I do not presume to try to trace in detail any 'course of studies'. However, it seems to me obvious that investigations which begin with *functional* questions will require for their solution the methodology of general semantics and data now classified as 'psychology', 'sociology', etc., as well as 'literary' data. Since, as we noted above, the most stimulating insights into linguistic habits and literary processes have lately come from *outside* the English 'field', this necessity is most pressing today. Of course, by this statement, I do not recommend that literary students should stop studying a 'field' called literature and begin studying a 'field' called anthropology. I merely insist that we recognize that our study is the study of men-in-society, and that we study the same men that a professional anthropologist studies. Anthropologists, too, do not study 'anthropology'; they study the same men-in-society that we do. Methods which prove useful in explanation and prediction are useful anywhere.

In terms of procedures in the graduate schools, what is here suggested is that the aim of all instruction and research should be to train the student to discern *what is happening* in any linguistic utterance which he chooses to study. In any 'great' work of art, of course, a very great deal is happening in the artist and in the situation to which his work is a response; still other things happen in readers in view of *their* situations as they see and live them. To understand this, even dimly, the student must read widely of other literature, but also he must understand methods and data which are now classified in academically 'remote fields'. The essential is that he study *whatever* helps him comprehend, even though he may fail to cover completely the 'field' defined in the orthodox handbooks. The mountain of data accumulated by conventional linguistics, literary history, etc., lies ready to be *used* by scholars in investigations which will make clearer to us the complex ways in which our lives and our civilization are affected by how we speak and what we admire and give assent to.

For example, in linguistics, general semantics has called attention to the profound effect which the *structure* of our linguistic formulations has upon our patterns of 'thinking', acting, etc., and hence upon the kind of civilization we create. Close and systematic studies of the words which different languages—or different ages in the 'same' languages—use to designate similar areas of human experience are indicated: the shades and nuances of words, the attitudes of pride, superiority, defiance, etc., expressed, related to the social phenomena of the time, would indicate the kind of reactions and so behaviors which the use of the language would 'coach' and encourage. Like investigations of rhythms, images, and sentence-structure would be even more revealing. (The periodic sentence expressed an attitude and subtly suggested a whole range of behaviors.) Linguistics would tend to become the study of how neuro-linguistic

and neuro-semantic mechanisms work and have worked, and hence would also become a vehicle for redirecting our own reactions toward flexibility and sanity.

In addition to transcending the notion of the 'field', it seems to me that we must revise our notion of 'scientific method' (assumption *G*). Twentieth century scientific method is an orientation, not the habitual procedure and methods of an academic department. We must examine very carefully what we consider to be the 'facts' of our study. Most English graduate schools require students to know masses of 'facts' (see *A*), whose relation to each other is precisely (and perhaps only) that this is the information *defined* as 'fact' in the context of the field. But this notion of science as a specialized subject-matter is not the multi-valued extensional orientation of modern scientific methodology which distinguishes different levels of 'facts' and looks for the structure and order of the *processes* involved. The 'facts' of the graduate schools are mainly facts about the documents; the codified results of approved investigations are the usual content of courses, examinations, etc. In this atmosphere of documents (and *there only*) it is possible to forget that, in enormous areas of literary investigation, we simply *do not* know how to distinguish first-order facts from our verbalizations about them, and we have not yet invented terms similar in structure to these facts to aid us in evaluating the mass of data which conventional methods have built up.

A word now about the importance of general semantics in this proposed re-orientation of literary studies from 'factual-historical' to functional methods and problems. It would seem that training in general semantics should be a basic discipline for scholars whose professional concern is to be with language-behaviors. General semantics provides the background of theory and method, the generalization of the implications of twentieth-century science, whereby thoroughly functional study is possible in the so-called inexact sciences and the humanities, and whereby the artificial splitting off of a separate field of 'literary fact' unrelated to general knowledge can be avoided. In another, but related direction, training in general semantics would form the basis for a synthesis not only of 'intellectual knowledge' but also of control and flexibility in total organismic responses.

Here there is another important implication of general semantics for graduate-school training in the humanities. Training in general semantics provides a solution *in principle* for resolving the dichotomy between 'scholarship' and 'teaching' (see *H*) which demoralizes many academic scholars.¹⁵ The same mechanisms that produce departmental absolutism, rigidity of opinion, etc., also produce personal anxieties, fears, neuro-social disintegration and demoralization. Functional investigation of problems, conducted with knowledge of the life-implications of linguistic formulations, will prepare scholars to train students in techniques leading to neurological integration and proper evaluation. Therefore, as a *result* of a new orientation of their studies, they will be able not only to discover 'information' and to 'give courses', but also to introduce factors for sanity into the socio-cultural crisis of our time.

This paper may well conclude with this consideration of the implications which general semantics has for literary scholars, for we have reached what is, in a way, the

¹⁵ I introduce the qualification 'in principle' because academic positions frequently represent vested interests in verbalism so important to their holders that they will 'defend' them; and, as long as this behavior brings rewards, it will find its practitioners. Thorstein Veblen long ago anatomized this aspect of higher education in a pecuniary culture.

re-statement of the goal of humanistic learning. By an ancient tradition, the study of literature and art has to do with wisdom, with proper evaluation of life. Treated as mere 'ideals', as *words*, statements such as this have been much abused by sentimentalists; nevertheless it is profoundly important that the generalizations of twentieth-century scientific methodology suggest that they can become the center about which graduate school training and teaching in the humanities can be organized.

However, before concluding, I want to guard against a possible false impression which the method of presenting these considerations may have created. First, the re-orientation suggested is not 'radically new'. The general works which form the theoretical base and supply the methods for re-orientation¹⁶ are widely known and studied. Furthermore, there already exists a considerable quantity of the kind of 'functionalist' scholarship and criticism which I have been urging as desirable.¹⁷ Second, the re-orientation of literary studies will not require such a complete revision of graduate school courses and curricula as perhaps my statements have seemed to recommend. In practice, this re-orientation will probably consist of using what we have more flexibly to achieve broader and more general results. The change recommended is in attitude and orientation of teachers and students, rather than a formal change to a 'new' curriculum.

This paper began by describing a widespread dissatisfaction among English scholars with 'scholarly methods' and their social results. These scholarly methods, we found, are the result of some very definite (though often unformulated) notions about English graduate study, which seem to me to be both rigid and structurally unlike the processes involved in literature and language itself. This rigidity tends to prevent our graduate schools from achieving some results which, from a broader view of

¹⁶ I cannot here give an adequate bibliography, since that would involve an enormous list of works which have contributed toward modern relativistic, non-aristotelian, dynamic orientations, evaluations, etc. I can only mention a few books, in addition to those already cited, which seem to me to be especially useful for students of literature (not necessarily for content but for suggestions and methods). For a minimum, add to the works already cited: *Encyclopaedia of the Social Sciences* (New York: Macmillan, 1933), 'Culture', IV, 621; 'Functionalism', VI, 523; 'Literature', IX, 523. Lewis Mumford, *Technics and Civilization* (New York: Harcourt-Brace, 1934). Kenneth Burke, *Attitudes toward History* (New York: New Republic Press, 1937). Thorstein Veblen, *The Theory of the Leisure Class* (New York: Macmillan, 1918) Chaps. IV, VI, XIV. Oswald Spengler, *The Decline of the West* (One volume edition; New York: Knopf, 1937). Despite its bombast, extremely stimulating and suggestive of detailed researches. John Dewey, *Intelligence in the Modern World* (New York: Modern Library, 1939). C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (Revised edition; New York: Harcourt-Brace, 1938).

Alfred Korzybski's work is fundamental. His notions of 'linguistic structure', 'neuro-semantic environment', etc., state the linguistic problem in a way which transcends subject-matter 'fields' and makes functional study possible. Above all, he shows the life-implications of linguistic formulations. My own indebtedness to his teaching for help in formulating the present problem is very deep and I gratefully acknowledge it.

¹⁷ Again, any adequate bibliography would be too long for this article. However, as books which point in the 'right' direction, we can cite as examples (in addition to Burke's *Philosophy of Literary Form*, already mentioned): Edmund Wilson, *The Wound and the Bow* (Boston: Houghton-Mifflin, 1941). William Empson, *English Pastoral Poetry* (New York: Norton, 1938). David Daiches, *The Novel and the Modern World* (Chicago: University of Chicago Press, 1940). S. I. Hayakawa, *Language in Action* (New York: Harcourt-Brace, 1941). Newton Arvin, *Whitman* (New York: Macmillan, 1938). Christopher Caudwell, *Illusion and Reality* (London: Macmillan, 1937).

humanistic studies, they ought to accomplish. I have suggested that our notions of our 'field' and of 'scientific method' should be revised and that our graduate schools should encourage functional investigations which would treat poetry, grammar, etc., as *structures performing functions* rather than as 'things'. I feel that this re-orientation points the way toward a synthesis of knowledge which is more than a synthesis of 'intellectual' abstractions. Perhaps the dissatisfaction within the profession will be less marked if we concern ourselves less with egocentric display of what we 'know' as specialists, and more with the yet unsolved problems of human evaluation.

A THEORY OF MEANING ANALYZED: A CRITIQUE OF I. A. RICHARDS' THEORY OF LANGUAGE*

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Since the appearance of *The Meaning of Meaning* in 1923 and *Principles of Literary Criticism* in 1924, students of linguistic and literary theory have been following with interest the work of Mr. I. A. Richards. His prestige has been growing steadily with the volume of his work, and since the publication in 1938 of *Interpretation in Teaching* (which, in the words of its Preface, 'came into being under the kindly stimulus of the General Education Board') he has been regarded by many as the leading authority on 'The Application of the Theory of Interpretation to General Education'.¹

Mr. Richards' work is brilliant, suggestive, often penetrating, always stimulating. But it is a mistake to approach him as an 'authority'. Indeed, his work is weakest just where a theorist's work should be strongest. It suggests interesting lines of approach which others may explore. It attacks aggressively and with intent to kill points of view which Mr. Richards finds unacceptable, and when it retreats, fights brilliant rear-guard actions. But it is much less successful in organizing and presenting a basic general theory which others may develop or put into practice. It is, in other words, stimulating for the reader, but dangerous for the critic or the teacher who attempts to apply the theory. This characteristic of Mr. Richards' work is not easily seen by the casual student, who, even if he has the linguistic, psychological, and philosophical equipment to follow the argument critically, may not have the opportunity to study with the care they deserve and need Mr. Richards' many volumes, and perhaps feels that Mr. Richards *must* have thought out his fundamental approaches very carefully when he holds up such promising hopes for the future of criticism and rhetoric and attacks with such uncompromising ardor other points of view.

The present paper—which is an abridgment of a much longer monograph—will attempt to indicate briefly wherein Mr. Richards' fundamental approaches and central theoretical positions are inadequate for the student of linguistic and literary theory. In doing this briefly, the writer must of necessity do it very sketchily. He refers anyone who wishes to examine the criticism in more detail to the monograph itself.

The central objection to Mr. Richards' theoretical position may be stated as follows: *So far as he presents a clearly organized systematic theory of the nature and*

* This paper is an abridgment (about one-fourth the length of the original) of *A Theory of Meaning Analyzed*, General Semantics Monographs, No. III (Chicago: Institute of General Semantics, 1942). The abridgment was made to be read at the Second American Congress on General Semantics, University of Denver, August, 1941.

¹ C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (London: Kegan, Paul, Trench, Trubner and Co.; New York: Harcourt, Brace & Co., 1923). References in this paper are to the fourth edition, 1936. The title will be abbreviated below to *MM*. I. A. Richards, *Principles of Literary Criticism* (New York: Harcourt, Brace and Co., 1924). References in this paper are to the second edition, 1926. The title of this volume will be abbreviated below to *PLC*. *Interpretation in Teaching* (New York: Harcourt, Brace and Co., 1938).

uses of language, it is inadequate; and most of what he has written, however penetrating or suggestive, does not contribute to such a theory.

Mr. Richards' central view of the nature and uses of language is outlined in *The Meaning of Meaning*, which he wrote with C. K. Ogden. The position there presented he explains further in *Principles of Literary Criticism*, at the end of which, Mr. Richards writes, 'The last movement of this machine to think with is now completed.'

The theory of the uses of language presented in *The Meaning of Meaning* was organized with the controlling purpose of providing a basis—not for the analysis of language in general—but for the analysis of reflective thought and scientific communication. A few quotations may make this clear. The authors say in their opening chapter,

Symbolism is the study of the part played in human affairs by language and symbols of all kinds, and especially of their influence on Thought [capital T]. It singles out for special inquiry the way in which symbols help us and hinder us in reflecting on things.

Symbols direct and organize, record and communicate. In stating what they direct and organize, record and communicate, we have to distinguish as always between Thought and Things. It is Thought [capital T] (or, as we shall usually say, *reference*) which is directed and organized, and it is also Thought [capital T] which is recorded and communicated.²

As Mr. Richards says clearly elsewhere, by *reference* or *Thought* with a capital T they mean conscious intellectual activity.³ However, they go on,

besides this referential use which for all reflective, intellectual use of language should be paramount, words have other functions which may be grouped together as emotive. . . . The importance of the emotive aspects of speech is not thereby minimized, and anyone chiefly concerned with popular or primitive speech might well be led to reverse this order of approach. Many difficulties, indeed, arising through the behaviour of words in discussion, even among scientists, force us at an early stage to take into account these 'non-symbolic' influences. But for the analysis of the senses of 'meaning' with which we are chiefly concerned . . .⁴

It will be noted that in drawing these distinctions between the 'symbolic' and the 'emotive' uses of language the authors were primarily concerned with the 'symbolic' use, which should, they say, *be paramount for all reflective, intellectual use of language*. The 'emotive' use is important and might be considered primary by anyone chiefly concerned with popular or primitive speech. But they themselves were chiefly concerned with language for the purpose of 'singling out for special inquiry the ways in which symbols help us and hinder us in reflecting on things.' This of course was a perfectly legitimate concern; the only point is to note what it was.

With this controlling interest they drew up a theory of the 'symbolic' versus the 'emotive' uses of language. Let Mr. Richards summarize it in his own words. 'There are,' he says, 'two totally distinct uses of language.'⁵

A statement may be used for the sake of the *reference*, true or false, which it causes. This is the *scientific* use of language. But it may also be used for the sake of the effects in emotion and attitude produced by the reference it occasions. This

² *MM*, p. 9.

³ See *PLC*, p. 262.

⁴ *MM*, p. 10.

⁵ *PLC*, p. 261.

is the *emotive* use. The distinction once clearly grasped is simple. We may either use words for the sake of the references they promote, or we may use them for the sake of the attitudes and emotions which ensue.⁶

The theory of signs on which they base their two-fold classification is in accord with our knowledge of psycho-physiology in its first premise. After that it proceeds by arbitrary, *ad hoc* definitions. The first step is the explanation of how a word becomes a sign for an individual and hence acquires what is frequently called its meaning, but which they here call its *Interpretation* (capital *I*). Briefly, a word becomes a sign through becoming a conditional stimulus (though they avoid the terms *conditioned* and *conditional*). In their words,

A sign is always a stimulus similar to some part of an original stimulus and sufficient to call up . . . the residual trace of an adaptation made by the organism to the stimulus.⁷

Our Interpretation of any sign is our psychological reaction to it, as determined by our past experience in similar situations, and by our present experience.⁸

This is the basis for what Mr. Richards calls the context theory of Interpretation, and sometimes more recently the context theory of meaning.

So far this is sound psychology, and to me at least unobjectionable. But it is not yet satisfactory for their controlling purpose. Because of this purpose, they have to account, no matter what else they do, for 'true' as distinguishable from 'false' scientific communication. So they define the key-words *meaning* and *symbol* to suit this purpose. They define 'meaning' in what they call the 'clear and definite sense of "meaning"', 'the most important sense in which words have meaning,'⁹ not as the 'Interpretation' or 'psychological context' of a word, but as *only that part of the 'Interpretation' of a word which is a reference to a referent*. 'Referent' they define as a fact or event of such a nature that

all possible referents together form an order, such that every referent has one place only in that order. . . . There is no difference between a referent and its place.¹⁰

'Reference' they define as the cognitive act of thinking about or mentally referring to a referent: 'It is Thought [capital *T*] (or, as we shall usually say, *reference*)'; '*reference*, the term we introduced to stand for thought of cognition.'¹¹ 'Symbol' they define, not as a sign or word, but as *only that part of a word which refers to a referent*. If a word does not refer to a referent, it is not a symbol. Thus they say, 'In "good morning" and "good-bye" the referential function lapses, *i.e.*, these verbal signs are not symbols.'¹² 'A symbol as we have defined it . . . symbolizes an act of reference.'¹³

As the term *meaning* is important in Mr. Richards' vocabulary, it should be emphasized that so far as this term is clearly defined in the theory of language presented in *The Meaning of Meaning*, it is defined in terms of the references which words symbolize. This point is of special interest since Mr. Richards has not held consistently to this position. As the authors themselves say,

⁶ *PLC*, p. 267.

⁷ *MM*, p. 53.

⁸ *MM*, p. 244.

⁹ *MM*, p. 200.

¹⁰ *MM*, p. 106.

¹¹ See *MM*, p. 9 and *PLC*, p. 262.

¹² *MM*, p. 234.

¹³ *MM*, p. 205.

In other cases ambiguity may be fatal to the particular topic in which it occurs, but here such ambiguity even renders it doubtful what discussion itself is. For some view of 'meaning' is presupposed by every opinion upon anything, and an actual change of view on this point will for a consistent thinker involve change in all his views.¹⁴

Since the term *meaning* is discussed from many points of view in *The Meaning of Meaning*, I must emphasize that what we are concerned with here is not the history of the word, including its negative form *meaningless*, or the ways philosophers have used the term, or all the possible ways in which it may be used, as exhibited through the technique of multiple definition; but simply with the way in which Mr. Richards (working with or without Mr. Ogden) has used it in his central theory. For, to quote *The Meaning of Meaning* again, this is 'a field where the most rigid accuracy is desirable'¹⁵ and 'great care is required in the use of the term "meaning", since its associations are dangerous.'¹⁶ And—to repeat—in *The Meaning of Meaning* the authors do not define the 'meaning' of a sign as its 'Interpretation'. They give at length a psychological explanation of the way a sign is related to its 'Interpretation', but except as 'meaning' is defined as 'reference', they do not explain the way a sign is related to its 'meaning'.¹⁷

If in *The Meaning of Meaning* the authors had indicated a little more carefully the way in which they define 'meaning' 'in the most important sense in which words have meaning' as only a part of what they call the 'Interpretation' of a word, and 'symbol' as only part of a word or sign, what they have done in framing their theory of language would be more clearly evident. But although they insist that this is 'a field where the most rigid accuracy is desirable', they assume rather than explain that in their theory they have limited the term *meaning* so that it refers to only the referential part of the actual 'psychological context' or 'Interpretation' of a sign. And though they use many pages explaining what they mean by a 'sign' and its 'Interpretation', they do not explain as carefully as they might that in their theory *symbol* is used to mean, not a sign or word, but only that part of a word which refers to a referent. In fact, although they explicitly define *symbol* as 'symbolizing an act of reference',¹⁸ they confuse the issue by speaking in a number of places of 'symbol' as equivalent to 'word' or 'sign', even stating at the outset that 'Symbolism' is the study of *all* uses of language.¹⁹

Having taken the valuable words *symbol* and *meaning* into the 'referential' or 'symbolic' camp, they define *communication* also in terms of what they call the 'symbolic' use of language. So they say,

Thus a language transaction or a communication may be defined as a use of symbols in such a way that acts of reference occur in a hearer which are similar in all relevant respects to those which are symbolized by them in the speaker.²⁰

¹⁴ *MM*, p. 248.

¹⁵ See *MM*, p. 248.

¹⁶ *MM*, p. 22.

¹⁷ See *MM*, Chs. III, IV, X, and Appendix B.

¹⁸ See *MM*, p. 205.

¹⁹ E.g., *MM*, pp. 9, 23, 203.

²⁰ *MM*, pp. 205-206.

In like manner they restrict the term *knowledge* to the referential use of language. After discussing 'knowledge', they conclude,

It ought to be impossible to talk about poetry or religion as though they were capable of giving 'knowledge' . . . A poem . . . has no concern with limited or directed reference. It tells us, or should tell us, nothing.²¹

Further, according to this theory it is only the referential or symbolic use of language which can be judged by the criterion of 'truth'.

. . . from the question, What is Truth? an apparently insoluble problem has arisen. In Chapter III [of *The Meaning of Meaning*] however the problem was seen to be soluble as part of the theory of Interpretation.²²

They define a 'true symbol' as 'one which correctly records an adequate reference.'²³ On the other hand, 'So far as words are used emotively no question as to their truth in the strict sense can directly arise.'²⁴ What they mean by 'truth in the strict sense' can be seen from this statement:

The best test of whether our use of words is essentially symbolic or emotive is the question—'Is this true or false in the ordinary strict scientific sense?' If this question is relevant then the use is symbolic, if it is clearly irrelevant then we have an emotive utterance.²⁵

They thus classify one of their two major uses of language in such a way that it alone conveys 'meaning' in the most important sense', it alone uses 'symbols', it alone is a 'language transaction' or a 'communication', it alone can convey anything which ought to be called *knowledge*, and only by reference to it can the problem 'What is Truth?' be solved.

Let us assume for the moment that this analysis of 'referential' or 'symbolic' language provides a theory satisfactory for one use of language—for the analysis of language which can be weighed in the scales of science. But where does it leave the rest of language?

The consequence of such a stacking of cards for one of their two uses of language can hardly be happy for the other. Indeed, it is a tribute to the intellectual ingenuity of Mr. Richards that the second or 'emotive' use makes as good a showing as it does. The logic he follows is this. Since words in the 'emotive' use of language cannot 'communicate' as do words used as 'symbols', their effect must be explained in some other way. Now words are signs: and signs are stimuli. Therefore words can *stimulate* or *excite*. But *what* can they stimulate or excite? Clearly, something which is not Thought [capital *T*] or 'knowledge'. This negative limitation is important if we are to understand the theoretical position of 'emotive' language. This limitation makes it logically untenable for the theory to assume that what is evoked is 'experience' in any inclusive sense: for 'experience' in any inclusive sense would include in a more than subsidiary way reflective and intellectual activity, the Thought with a capital *T*, which according to this theory it is the essential function of the *symbolic* use of language to communicate.

²¹ *MM*, p. 158.

²² *MM*, p. 101.

²³ *MM*, p. 102.

²⁴ *MM*, p. 150.

²⁵ *MM*, p. 150.

The conclusion Mr. Richards reaches is that the 'emotive' use of language is that which expresses and excites *emotions* and *attitudes*. These terms he defines carefully. 'Emotions,' he says, are defined in this theory according to 'what may now be regarded as the standard use in psychology.' They are characterized by two main features. One of these is 'a diffused reaction in the organs of the body brought about through the sympathetic system. The other is a tendency to action of some definite kind or group of kinds.'²⁶ He specifically rules out a broad 'literary' definition of emotion, and the definition of 'aesthetic emotion'.²⁷ An attitude is defined as an impulse or a tendency to action, incipient or imaginal rather than overt. 'These imaginal and incipient tendencies to action,' Mr. Richards says in his official definition, 'I shall call attitudes.'²⁸

Attitudes are said to be more important in the definition than emotions. 'Emotions are primarily signs of attitudes.'²⁹ His second use of language, therefore, is that which expresses and excites emotions, and, more important, attitudes, or non-overt tendencies to action.

It thus seems clear that Mr. Richards' central theory of the uses of language has grown out of a controlling interest in the problems of scientific or 'symbolic' communication. The general structure and the key-terms of the theory are designed for the analysis of the so-called 'symbolic' use of language. As a consequence, the definition of the 'non-symbolic' or 'emotive' use is forced to accommodate itself to the theoretical position which remains. The resulting analysis of the 'emotive' use, which certainly is intended to include poetry and apparently also 'other literary experiences',³⁰ is almost inevitably unsatisfactory. Nevertheless, as Mr. Richards begins his central theory with the classification of the 'symbolic', he accepts the resulting classification of the 'emotive' use, though in the attempt to make it 'workable' he confuses rather than clarifies its outlines.³¹

* * * * *

Mr. Richards' theory of the uses of language seems to me far from adequate as a basis for the study of language or the study of literature. For one thing, this two-fold classification of language uses is much too incomplete. According to it, all uses of language which cannot be judged true or false in the ordinary scientific sense must be classified as 'emotive'. There are, of course, many language transactions which can properly be judged true or false in 'the ordinary scientific sense', and there are also many uses of language whose central characteristics place them within the definition of 'emotive'. But I submit that in addition there are a great many uses of language which are not properly placed in either category. However, no other classification is provided by this theory.

Further, the analysis of the central characteristics of what Mr. Richards calls the 'emotive' use of language seems to me quite unsatisfactory. Whatever else Mr. Richards had in mind in defining 'emotive' language, it is clear that he meant it to include much 'literature', and that 'poetry' is to be considered the supreme example. I would grant,

²⁶ PLC, p. 101.

²⁷ PLC, pp. 15, 101.

²⁸ PLC, p. 112.

²⁹ PLC, p. 132.

³⁰ PLC, pp. 117, 130.

³¹ PLC, pp. 226-227.

of course, that many, perhaps all, poems do arouse emotions and attitudes. I would go further and say that in analyzing some lyric poems, the description of their essential characteristics in terms of the 'emotions' and 'attitudes' expressed is probably as useful as any other type of technical description. But I do not find adequate a theory of the uses of language which requires us to assume that in more complex poems—in 'Troilus and Cressida', for example, or 'Paradise Lost'—the words are used *primarily* to produce effects in emotion and attitudes, with anything else evoked by the poem, including intellectual processes, at most contributory to these effects; or, as the alternative, to assume that these words are used to cause references which may be judged true or false in the ordinary scientific sense. I do not find such a theory, however brilliantly elaborated or defended, satisfactory.

This theory provides a basis more useful for the study of poetry, however, than for the study of prose which cannot be evaluated adequately as true or false in the ordinary scientific sense. Indeed, I suggest that Mr. Richards' central theory will be found most adequate for, as I believe it was at least implicitly designed to meet, the problems of scientific communication on the one hand and of 'poetic' communication, in a somewhat conventional sense, on the other. But the theory largely disregards the problems of non-scientific prose, especially of prose fiction and drama. It gives neither a satisfactory analysis of nor a useful approach to the way words are used in, say *Madame Bovary* or *Key Largo* or *Lord Jim*.

Perhaps the most misleading feature of this theory, finally, is its definition of the uses of language in *elementalistic* terms:²² its definition of the 'symbolic' use of language in terms of intellectual activity—*reference* or *Thought with a capital T*—and of non-scientific language in terms of *non-intellectual* psychological *elements*—*emotions* and *attitudes*. It thus falls heir to all the pitfalls of elementalism, which any sound psycho-physiological theory should avoid.

Such an elementalistic linguistic theory makes a very inadequate basis for literary theory. To give a satisfactory explanation of what non-scientific language communicates, a theory must, it seems to me, indicate the way in which reflective and intellectual processes do more, in many 'literary' and 'poetic' experiences, than simply contribute to the excitement of emotions and attitudes. And to define all non-scientific uses of language in terms of psychological 'elements' such as 'attitudes' and 'emotions' is both inadequate and dangerous. For the reader equipped to follow critically the subtlety and sophistication of Mr. Richards' thought, it is inadequate; for the reader not so equipped, it is also dangerous. Such a definition carries the dangerous implication that whereas the 'scientific' use of language is best characterized as communicating 'Thought', 'literature' is best characterized as emotion-rousing; and it confuses rather than clarifies many important distinctions, such as that between the linguistic activity of the demagogue and the linguistic activity of the poet.

To define in terms of 'attitudes' and 'emotions' is either to assume that mental 'elements' such as these do exist as 'entities' in some distinct sense, which we have no reason to suspect Mr. Richards of assuming, or to assume that they are not distinct

²² See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941), pp. 21-22, for a discussion of the dangers of 'elementalism'; especially the introduction to the second edition, pp. xxx-xxxii; also the index.

'elements', but are more subtly interwoven as phases or components in larger experiential wholes, in which case a ready source of confusion between 'attitude' or 'emotion' on the one hand and 'experience' on the other is introduced unless these are carefully and continuously distinguished. The fact that these are not carefully and continuously distinguished in Mr. Richards' presentation of his theory accounts in part for its plausibility when first encountered.

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Since this theory was presented, Mr. Richards has published a number of volumes—*Science and Poetry*, *Practical Criticism*, *Coleridge on Imagination*, *The Philosophy of Rhetoric*, and *Interpretation in Teaching*, not to mention *Mencius on Mind* and the books on Basic. He has said a number of stimulating things about a great many linguistic and literary matters, and has frequently said them challengingly and well. But in these volumes he has not presented any new general theory of the uses of language to take the place of the central theory presented in *The Meaning of Meaning* and *Principles of Literary Criticism*, and, further, much of what he has written since not only does not support but contradicts or confuses that central theory.

The exposition of confusion can hardly hope to be clear; nor is this the time to attempt it. But let me point out, finally, one basic source of confusion in Mr. Richards' later work. This is his apparent uncertainty as to the fundamental value of a carefully organized systematic theory—in other words, as to the value of a guiding theory or *hypothesis*. At times he preaches the need for such a theory in the study of language. For example, in *The Philosophy of Rhetoric* he urges the need for a 'persistent, systematic, detailed inquiry into how words work' which will 'take charge of the criticism of its own assumptions.' Such a study, he says, 'must itself undertake its own inquiry into the modes of meaning,' both on a macroscopic scale and 'on a microscopic scale by using theorems about the structure of the fundamental conjectural units of meaning and the conditions through which they, and their interconnections, arise.'³³ At other times, however, he seems to suggest that in the study of 'Interpretation' systematic theories may be discarded. Thus in *Interpretation in Teaching* he rejects psychological theory as a basis for teaching an understanding of language and concludes that

Our errors in teaching technique can be corrected more easily, and more safely, I believe, from our awareness of how we learn and think, than from the recommendations of educational psychology, which at present only confirm some parts of common knowledge.³⁴

And later in the same volume he 'reiterates' that in these subjects,

our aim must be to perceive as distinctly as possible what we are doing rather than to arrive at any final-looking positive theories. As we do so a great number of theories that are too crude to sustain the examination and have only at a distance been supposed to apply, are discarded; and to be rid of them is a great gain. We may be left without any theory, but we are at least freed from the interference of mishandled abstractions.³⁵

³³ I. A. Richards, *The Philosophy of Rhetoric* (New York: Oxford University Press, 1936), pp. 22-24.

³⁴ *Op. cit.*, p. 10.

³⁵ *Ibid.*, p. 249.

In other words, Mr. Richards, far from presenting a new systematic theory in his later work, is not even quite sure that such a theory is worth developing.

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In this paper I have of course not attempted to do critical justice to the literary sensitivity and penetration which have entered into the formulation, statement, and defense of Mr. Richards' thinking about the way words work and 'meanings' are expressed. On the contrary, I have been concerned with directing attention toward an important weakness in his work—a weakness which, unfortunately, is central. For with all the virtues of Mr. Richards' many volumes, so far as he presents a clearly organized theory of the nature and uses of language, it is inadequate; and most of what he has written, however penetrating or suggestive, simply does not contribute to such a systematic theory.

ELEMENTALISM: THE EFFECT OF AN IMPLICIT POSTULATE OF IDENTITY ON I. A. RICHARDS' THEORY OF POETIC VALUE

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THE SCOPE OF THIS PAPER

An examination of Ogden and Richards' theory of signs expressed in *The Meaning of Meaning*¹ and of Richards' consequent theory of literary value expressed in *Principles of Literary Criticism*² offers empirical evidence of some fundamental difficulties pointed out by Alfred Korzybski in his book, *Science and Sanity*.³

It is Korzybski's observation that the structure of our current everyday language embodies implicit assumptions that lead men to positions contrary to present knowledge of neurological functioning and hence, eventually, to faulty evaluation.⁴ Present experimental knowledge of physiology and present clinical psychiatry indicate that the human organism works as an integrated whole by means of ordered processes.⁵ But our everyday language presents the human being as composed of discrete elements with disconnected functions. Thus we have 'mind' and 'body', 'intellect' (or 'reason') and 'emotion' (or 'feeling'). This kind of representation Korzybski calls 'elementalism'.⁶

¹ C.K. Ogden and I.A. Richards, *The Meaning of Meaning* (4th ed. revised; London: Kegan Paul, Trench and Trubner; New York: Harcourt, Brace and Co., 1936). Citations will be to pages in the above edition. The first edition was issued in 1923. The fourth edition represents no change in the author's position. The title will be abbreviated below to *MM*.

² I.A. Richards, *Principles of Literary Criticism* (5th ed.; London: Kegan Paul, Trench and Trubner; New York: Harcourt, Brace and Co., 1934). Citations will be to pages in the edition above. The first edition was issued in 1924. The fifth edition represents no changes in the authors' position. The title will be abbreviated below to *PLC*.

The present study of Richards' aesthetic theories and of his theory of signs should be extended to include other works of his. Although the scope of the present slight sketch precludes such an extension, it should be noted that Richards appears to have changed some of his views since 1933. In *Mencius on the Mind* (1932), *Coleridge on Imagination* (1934), *The Philosophy of Rhetoric* (1936), *Interpretation in Teaching* (1938), Richards appears no longer to conceive of a static 'reality' to which 'true' language refers in a single-valued fashion. However, Richards has never, to my knowledge, expressly retracted his earlier opinions.

³ See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941). The title will be abbreviated below to *S & S*.

⁴ These observations are formulated by Korzybski in a number of places, among which the most convenient is *S & S*, Chapter VII, 'Linguistic Revision', pp. 85-98.

⁵ The literature of developmental physiology and of psychiatry generally, emphasizes this opinion. In physiology Jacques Loeb and Charles M. Child, in neurology C. S. Sherrington and C. J. Herrick, in psychology Henri Piéron have done much to advance this point of view. The work of Child, who described the reciprocal influence of function and morphological structure in terms of 'physiological gradients', has been somewhat corrected (see Joseph Needham, *Chemical Embryology*, England: Cambridge University Press, 1931, Vol. I, p. 582 ff.), but not radically altered by later research. In psychiatry (Freudian or non-Freudian) the opinion is a guiding principle in clinical practice. The recent appearance (1938) of the new journal *Psychosomatic Medicine* (Washington, D. C.) illustrates how strong this view has become even where it affects the radical matter of body-mind division. The works of Loeb, Child, Sherrington, Herrick, Piéron are listed for the interested reader in the bibliography of *S & S*.

⁶ *S & S*, pp. 123-130. The term is also used by Korzybski to cover artificial but absolute splits of integrated wholes elsewhere than in regard to 'nervous' functions.

If in discussions of psychology we treat 'mind' and 'body', 'intellect' and 'emotion' quite separately, then we have elementalism in our verbal structures. If in our daily living we consistently and strongly dissociate the functions so named, then we have an elementalism in our non-verbal functional structures. The latter kind of elementalism may be manifested in hysterical dissociation or other disintegrated evaluational processes.⁷ Korzybski concludes that linguistic elementalism abets dissociation in our non-verbal functional structures.⁸

Thus the practical issue is clear, if Korzybski's analysis is correct.

Further, it is Korzybski's observation that elementalism in our language is no mere excrescence on an otherwise well-formed linguistic structure.⁹ Rather, Korzybski observes that elementalism is a consequence of a postulate system underlying our key terms. Our linguistic structure, Korzybski believes, largely develops out of three postulates commonly called 'the three laws of thought' and commonly attributed to Aristotle.¹⁰ These three postulates are expressed in the formulas: (1) A is A, (2) A is either B or not B, (3) A is not not-A. Of the three postulates, the first, commonly called 'the law of identity', Korzybski considers the key to the postulate system; for if this law is denied, the others lose their harmful force.¹¹

According to this view, our everyday language embodies the 'aristotelian' postulate system through the conventional, historically established implications of many of its governing terms. Hence it is impossible for us to escape from the system and its elementalistic consequences unless we first deny the identity postulate, then replace those governing terms with others not historically associated with the postulate and with elementalism, and use further devices to change the structure of our linguistic habits.¹²

The presentation just given of Korzybski's theory contained only so much as was necessary to bring forward the points on which the following discussion will bear. Those points are as follows: *First*, the presence of the identity postulate in the structure of our everyday language; *second*, the elementalistic consequences of the postulate, so far as linguistic structure is concerned; *third*, the fact that these consequences derive even against our 'better knowledge'.

Empirical evidence for the *first* point is offered if it can be shown that Mr. I. A. Richards,¹³ a foremost modern writer in aesthetic theory, introduces, unawares, an identity postulate into the structure of his theory because of conventions in the struc-

⁷ So far as I am able to discover, this and the preceding sentence represent interpretations of my own concerning Korzybski's theory. But the interpretations are consistent with his formulations: see especially, *S & S*, pp. 469-561.

⁸ *S & S*, pp. 87, 149, 469-561. Linguistic elementalism need not, of course, be presented as the sole cause of dissociation in non-verbal functional structures. The present paper is largely concerned with elementalism, a habit of speech and of evaluation which it opposes. This opposition should not be taken as misguided support for what might be considered the contrary of elementalism; namely, identification of nervous functions as being all the same and incapable of dissociation for temporary needs. Curiously enough, a non-aristotelian system discloses thorough-going elementalism to be the systematic consequence of latent identification. But the subject is too large for analysis here.

⁹ See note 4 above.

¹⁰ See especially *S & S*, Supplement III, 'A Non-aristotelian System and Its Necessity for Rigour in Mathematics and Physics,' pp. 747-761.

¹¹ *Ibid.*

¹² *Ibid.*

¹³ See note 2 above.

ture of our everyday language. Empirical evidence for the *second* point is offered if it can be shown that elementalism results in his theory as a systematic consequence of this postulate. Empirical evidence for the *third* point is offered if it can be shown that elementalism is contrary to his express statements regarding his intentions and regarding psycho-logical facts.

A presentation of such evidence would at the same time indicate how poetic theory might be released from an embarrassing question. Since the time of Plato, discussions of the value of poetry in human experience have often been channeled by the 'absolute question', Is poetry true? If we discover that in the pursuit of this question we become involved with an identity postulate, we see that the question belongs within the postulate system of the 'three aristotelian laws of thought'. Then, if another postulate system is possible, discussions of poetic value may take other directions. This matter is of far-reaching significance, but the re-direction of poetic theory and the terminology suitable for it must be subject for a different study.

MR. RICHARDS' INTENTION TO PRESENT HUMAN FUNCTIONS
NON-ELEMENTALISTICALLY

Mr. I. A. Richards' desire to consider the human being an organism which functions as an integrated whole is to be noted both in his express statements regarding 'psychology' and in the inception of his literary theories.

In the beginning chapters of *Principles of Literary Criticism* Richards ascribes much of 'The Chaos in Literary Criticism' (the title of his first chapter) to the fact that aesthetic theory has considered literature apart from the other concerns of human life, assuming a 'Phantom Aesthetic State' (the title of his second chapter), or 'peculiar and specific' mode of experience,¹⁴ the existence of which he denies.¹⁵ This point of view leads him to such expressions as the following in regard to human experience with literature:

The separation of poetic experience from its place in life and its ulterior worths, involves a definite lop-sidedness . . . in those who preach it sincerely. . . . [This] view leads to an attempted splitting up of the experiencing reader into a number of distinct faculties or departments which have no real existence. It is impossible to divide the reader into so many men—an aesthetic man, a moral man, a practical man, an intellectual man, and so on. . . . In any genuine experience all these elements inevitably enter. But if it could be done, as many critics pretend, the result would be fatal to the wholeness and sanction of the critical judgment. We cannot *e.g.* read Shelley adequately while believing that all his views are moonshine . . . To say that there is a purely aesthetic or poetic approach to . . . the *Sermon on the Mount*, by which no consideration of the intention or ulterior end of the poem

¹⁴ *PLC*, p. 15.

¹⁵ *Ibid.* For this reason Richards goes on to consider the notion of value (Chapters V and VI), which he describes in relation to the psychology of impulses or appetencies (Chapter VII), as follows: 'Anything is valuable which will satisfy an appetency without involving the frustration of some equal or *more important* appetency' (p. 48, Richards' italics), the importance of an appetency being defined as 'the extent of the disturbance of other impulses in the individual's activities which the thwarting of the impulse involves.' (p. 51) In such fashions as this Richards makes it clear that he wishes to describe human functions as reciprocally influential.

enters, would appear to be merely timidity, the shrinking remark of a person who finds essential literature too much for him.¹⁶

The inception of Richards' book, followed with such passages as the one just quoted, makes it clear that if Richards does divide the reader up into distinct, elementalistic parts, he does so against what might be called his 'better knowledge'.

MR. RICHARDS' CONTRASTING ELEMENTALISM

Now let us see how Richards concludes *Principles of Literary Criticism*. The first sentence of his last chapter, entitled 'Poetry and Beliefs', reads: 'It is evident that the bulk of poetry consists of statements which only the very foolish would think of attempting to verify.'¹⁷ For, says Richards, on the next page, 'Poetry affords the clearest examples of [the] subordination of reference to attitude.'¹⁸ And 'The emotions and attitudes resulting from a statement used emotively need not be directed toward anything to which the statement refers.'¹⁹ Indeed, 'Opinion as to matters of fact, knowledge, belief are not necessarily involved in any of our attitudes to the world in general, or the particular phases of it. If we bring them in, if, by a psychological perversion only too easy to fall into, we make them the basis of our adjustment, we run extreme risk of later disorganization elsewhere.'²⁰ 'Actually, what is needed is a habit of mind which allows both reference and the development of attitudes their proper independence. . . . We try desperately to support our attitudes with beliefs as to facts, verified or accepted as scientifically established, and by so doing we weaken our emotional backbone. For [attitudes are] not justified by the soundness of the views which seem to be [their] ground and causes.'²¹

Here, then, we have a division of human functions into two sets which, according to Richards, are so independent that to make them reciprocally influential constitutes a 'psychological perversion'. This elementalism stems from a distinction which Richards makes in the chapter immediately preceding his last, from which I have just quoted. The earlier chapter is entitled 'The Two Uses of Language'. In this chapter Richards states: 'A statement may be used for the sake of the *reference*, true or false, which it causes. This is the *scientific* use of language. But it may also be used for the sake of the effects in emotion and attitude produced by the reference (i.e. 'thought') it occasions.

¹⁶ *PLC*, p. 79. Cf. pp. 17-18. To emphasize further Richards' desire to treat the organism as a whole, I may pair with the quotation just given one concerning faculty psychology: '(T)he customary cognition-feeling-conation classification of mental goings on is not a pigeon-holing of exclusive processes. Every mental event has, in varying degrees, all three characteristics. Thus expectation as a preparation for certain stimuli may lower the threshold for them, and sometimes makes their reception more and sometimes less discriminating. . . .' (*PLC*, pp. 88-89). 'Expectation, usually described as a cognitive attitude, becomes a peculiar form of action, getting ready, namely, to receive certain kinds of stimuli rather than others. The opposite case is equally common. Hunger, a typical desire on the usual account, would become knowledge. . . . These illustrations bring out clearly what is everywhere recognized. . . .' (*PLC*, p. 88). See also pp. 85, 86, 131, and the entire Chapter XIV, 'Memory'.

¹⁷ *PLC*, p. 272.

¹⁸ *PLC*, p. 273.

¹⁹ *PLC*, p. 273.

²⁰ *PLC*, p. 281.

²¹ *PLC*, p. 281.

This is the *emotive* use of language.²²

So far, then, the present paper has indicated that Richards concludes in elementalism a theory of poetic value which, at its inception, he intended to be distinctly and novelly non-elementalistic. Around the terms *attitude*, *emotive language* in his last chapters he erects once again a 'phantom aesthetic state' similar in respect of its elementalism to the one he demolished in his second chapter.

THE ORIGIN OF MR. RICHARDS' ELEMENTALISM: THE POSTULATE
OF IDENTITY

How did this reversal of Richards' intended theory come about? It has been noted that his separation of the values of 'thought-about-"facts"' from the values of 'attitude' and 'emotion' stems from his sharp distinction between the 'evocative' and the 'thoughtful' use of words. This distinction is not primarily the product of his analysis in *Principles of Literary Criticism*, although its grounds are briefly rehearsed there. It is taken almost bodily²³ from the book, *The Meaning of Meaning*,²⁴ which he published a year earlier with C. K. Ogden and in which these co-authors develop in detail a theory of signs, or 'thinking', a subject in which it is one of the milestones.

Limitations of space prevent me from fully reviewing the grounds for this distinction as they are worked out in their original presentation.²⁵ I must rather dog-

²² *PLC*, p. 267, my parenthesis, Richards' italics. Perhaps no portion of Richards' theory of poetry has had more influence on other modern critics than this distinction. Repeatedly one sees Richards' name given as authority for the opinion that there are two entirely distinct uses of words: one the evocative, emotional, or poetic; the other the symbolic, intellectual, or scientific. From this distinction it has been concluded that poetic experience is totally different from scientific and that poetic values have no concourse with the values of scientific statement.

Neither the distinction nor the conclusion drawn from it is new, of course; they are no more modern than the old and similar distinction between literal and metaphorical language. But seldom has the distinction been advanced with so much force as by Richards, and even more seldom, in conjunction with a theory which forthrightly aims at presenting the human organism as a whole. This fact makes Richards' works such an admirable locus in which to study the origins of a very old problem.

²³ E.g., *MM*, p. 150: 'Very much poetry consist [*sic*] of statements, symbolic arrangements capable of truth or falsity, which are used not for their truth or falsity but for the sake of the attitudes which their acceptance will evoke. For this purpose it fortunately happens . . . that the truth or falsity matters not at all to the acceptance. Provided that the attitude or feeling is evoked, the most important function of such language is fulfilled, and any symbolic function that the words may have is instrumental only and subsidiary to the evocative function.'

²⁴ See note 1 above.

²⁵ The following discussion of the theory of signs, doctrine of 'truth', and implicit use of a postulate of identity in *MM* is inadequate. For a full discussion, Ogden and Richards' use of synonyms must be established, the presence of a 'non-aristotelian' tendency in their work must be noted, how the authors' incompatible 'aristotelian' tendencies enter and how the incoherency between the two tendencies is obscured must be described. A full discussion is both lengthy and technical, requiring 150 pages of text, 50 pages of documentation, and some devices adapted from symbolic logic. It is hoped that this will be published later.

A reader acquainted with *MM* may present many passages indeed which contradict the thesis that I advance. Such contradictions, however, are present in Ogden and Richards' book. The present discussion serves to indicate how they arise and why they are insoluble so long as one retains an implicit (nowadays seldom explicit) postulate of identity in one's 'thought' (or evaluations) and the structure of one's linguistic habits. The contradictions are not the fault of Ogden and Richards, according to my position. The contradictions were unavoidable so long as the theory of signs was cast into terms in which our cultural heritage has embedded a postulate of identity.

matically assert that the impetus to an absolute distinction between 'thoughtful' and 'emotive' language is furnished by the hold which the true-false dichotomy has on our everyday linguistic structure. According to this dichotomy, a 'thought' or a statement is either decisively true or decisively false in *all* contexts, by virtue of the aristotelian 'law of the excluded middle term'. Ogden and Richards, attempting to construct a theory of signs or of 'thinking' in *The Meaning of Meaning*, naturally enough introduced this absolute dichotomy into their theory. Thus their book contains such sentences as the following: 'According to the theory of signs all references . . . are either true or false . . .'²⁶

Now 'thoughts' or statements labelled 'false' are, in virtue of our cultural traditions, held to be at least worthless, more probably dangerous, and perhaps even sinful. But Ogden and Richards believe poetry to be valuable. Hence unless they may call poetic statements 'true', they must either call them 'false' and thus deny values in which they believe, or else they must deny the applicability of the true-false dichotomy to poetry. The latter course requires them to remove responses to poetry from the realm of 'cognition', or 'thought', or 'reference', as they call it. This is the course they take, and this is one origin of their elementalism.

For they cannot call poetic statements 'true' by the criterion of truth which they formulate in their theory of signs. In this criterion is embedded an identity postulate in a fashion which makes the criterion clearly inadequate to poetic statement.

The identity postulate enters the authors' theory in the following way: First they assume that every 'thought' has a single, unique meaning, or referent. This assumption is best expressed for our present needs in the authors' chapter 'The Canons of Symbolism'. Canon One of this chapter reads: '*One symbol stands for one and only one Referent.*'²⁷ Canon Six reads: '*All possible referents together form an order, such that every referent has one place only in that order.*'²⁸ Such a canon characterizes the order of referents as being what mathematicians technically call a 'flat space'; i.e. a space in which no point has more dimensions than its fellows. To put the matter in terms of human motions, according to this canon there is one and only one way to reach each point of reference. Or to use very homely terms, there is only one way to kill every cat. This canon the authors expressly intend to be a summary of the 'three aristotelian laws of thought',²⁹ although I am highly doubtful as to the equivalence.

Having characterized each referent as unique, if the authors then say that a referent may appear twice, at different places in the temporal order of human life, they will be introducing an identity postulate into their theory of reference and of human organic processes which concern 'knowledge'.³⁰

But this is exactly what the authors do say concerning the referent of a 'true

²⁶ *MM*, p. 258.

²⁷ *MM*, p. 88.

²⁸ *MM*, p. 106.

²⁹ *MM*, pp. 105-106.

³⁰ My criterion for the use of the word 'identical' is adapted as a loose verbal translation of Whitehead and Russell's symbolic definition (*Principia Mathematica*, 2nd ed. (1925), Vol. I, p. 168, Proposition $\star 13 \cdot 191$. $\vdash :: y = x . \supset_y . \phi y : \equiv . \phi x$), i.e. if two things may be called identical, then whatever may be said of one may also be said of the other. Or to use the language of 'events': To call two events identical is to say that there is no difference whatever, in any respect, in regard to their surrounding events, no matter how far extended.

thought': In the case of a 'true thought', the referent occurs twice, once as a novel event which causes a sequent adaptation in an organism, a second time as an event to which that organism adapts itself anticipatorily on the occasion of a sign. The authors' theory of 'thinking' is avowedly a causal theory,³¹ such that according to it every 'thought' is an adaptation caused by an event.³² Hence, by definition in their theory, no 'thought' is possible unless the event to which the 'thought' refers has occurred and an adaptation to it has followed.³³ This event to which the organism adapts itself is named the 'referent of the adaptation', or 'thought', when that adaptation recurs later on the presentation of a sign.³⁴ But now, if the thought is true, according to their theory, this event named the referent must occur again.³⁵ Thus the referent of a

² *MM*, p. 50. Ogden and Richards' theory of signs appears to have been conceived, like Richards' theory of poetry, partly in the desire to consider human functions non-elementalistically, as reciprocal parts of an integrated whole. Thus the authors criticize 'the traditional approach' to the problem of 'thought', or 'meaning', for its assumption that 'thought' is a 'unique', 'unparalleled happening', 'as though there were no allied fields of inquiry' (p. 48). To replace this approach, the authors propose 'an account of thinking in purely causal terms, without any introduction of unique relations invented *ad hoc*' (p. 50), 'a natural as opposed to an artificial theory of thinking' (p. 50). This account will be in terms of signs, for 'Throughout almost all our life we are treating things as signs. All experience, using the word in the widest possible sense, is either enjoyed or interpreted (i.e., treated as a sign) or both, and very little of it escapes interpretation.' (p. 50) Previous attempts to provide a causal account of interpretation have tended 'to separate the treatment of fundamental laws of mental process from that of sign interpretation . . . They have led . . . to the discussion in isolation of problems essentially the same' (p. 51).

In contrast to their intentions, these authors are forced to throw out 'emotion' from subsumption under sign processes, as we have seen.

³¹ 'An engram is the residual trace of an adaptation made by the organism to a stimulus. The mental process due to the calling up of an engram is a similar adaptation: so far as it is cognitive, what it is adapted to is its referent, and is what the sign which excites it stands for or signifies.' (*MM*, p. 53)

'This [adaptation] is not necessarily a right or appropriate adaptation. We are here considering adaptation only so far as it is cognitive, and may disregard the affective-volitional character of the process.' (*MM*, p. 53, n.4.)

'The suggestion that to say "I am thinking of A" is the same thing as to say "My thought is being caused by A," will shock every right-minded person; and yet when for "caused" we substitute an expanded account, this strange suggestion will be found to be the solution.' (*MM*, p. 55)

'It is sometimes very easy by experimental methods to discover what a thought process is referring to. If for instance we ask a subject to "think of" magenta we shall, by showing various colours to him, as often as not find that he is thinking of some other colour. It is this kind of consideration which makes the phrase "adapted to" so convenient an equivalent for "referring to."' (*MM*, p. 75)

³² Cf. the note above. Also see *MM*, pp. 54-55, n. 1, p. 68, n. 1, and Appendix E, 'On Negative Facts,' pp. 291-295, in which the authors oppose Bertrand Russell's 'correspondence theory of truth' on the score that it assumes the existence of 'negative facts'.

³³ This sentence is a condensation of pages 53-54 of *The Meaning of Meaning* and also of Appendix B, 'On Contexts', pp. 263-265.

³⁴ 'Suppose now that we have struck [a] match and have expected a flame. We need some means of deciding whether our expectation has been true or false. . . .

'If now there be an event which completes the external context in question, the reference is true and the event is its referent. If there be no such event, the reference is false. . . .' (*MM*, p. 62)

Of course if we allow a degree of difference between the original event to which the original adaptation occurred and the new event which tests the recurring adaptation, or reference, then the new event need not be said to recur as the absolute identity of the original. But then a 'thought' ceases to be absolutely uniquely valued, there must be allowed some latitude in regard to the events to which a 'thought' refers, and the absolute dichotomy

'thought' is two events; yet it is also unique. The two events must then be one in all respects—that is identical.

Thus the authors' assumption of the uniqueness of the referent, of the single-valued quality of 'thought', is compatible with their definition of 'true thought' only if we introduce the identity postulate to cover all cases of valid thinking.

Possibly we wish to retain the doctrine of an absolute true-false dichotomy and, with it, the identity postulate. But Richards' experience indicates that the first result will then be either a denial of the value of poetry or the removal of poetry from the realm of 'thought'. This latter course is an heroic measure—more heroic than Richards realizes. In the first place, it requires the manufacture of 'faculties of the mind': we must have a faculty of 'emotion' governed by other fashions of judgment than the absolute true-false dichotomy which reigns in the realm of 'intellect'. In the second place—and this linguistic fact Ogden and Richards did not perceive—it removes poetic theory also from the field covered by the theory of signs, since we have made the true-false dichotomy a basic postulate therein.

But still other consequences follow. As we go on in our attempt to apply our criterion of valid 'thought' to the processes of actual living, we shall discover that not only poetry, but also all 'thinking' must be labelled invalid, since, so far as experience has informed us, no events are identical in all respects. And so eventually, if we continue this method of evaluation, we cease 'thinking' altogether.

On the other hand, we may deny the identity postulate. Then 'thought' ceases to be single-valued and may be satisfied by one or a group of values within the range of a function delimited by the thought-context, which may be broadened or narrowed.³⁶ If

between 'truth' and 'falsity' may not be permitted. This point of view Ogden and Richards sometimes adopt, where they speak of 'probability', 'the referent of a false belief', and elsewhere.

But the hold of what logicians call the 'universal quantifier' is so strong upon the authors that the final outcome of their theory is complete elementalism. In formal logic and in mathematical studies the universal quantifier has a place; it serves to abstract certain characteristics of a verbal or a non-verbal operation from other characteristics extrinsic in regard to a given purpose and thus to define the operation so that it may be indefinitely 'reproduced' or otherwise operated on. The careful and understanding use of the universal quantifier here does not obliterate our recognition that we have made an abstraction from the lower-level process which we have 'fixed' by its means. But Ogden and Richards use it to generalize the true-false dichotomy in a fashion that makes directed living, or 'knowing', a process of identifying together all characteristics of a recurring experience, not a process of abstracting from those characteristics.

³⁶ In contrast, Ogden and Richards' theory of signs limits the context of the 'thought' function absolutely. In the first of the following quotations the reader may note the phrases 'purely intellectual product', 'thinking in the narrower sense of reference that is governed by [external] stimuli'. It is hard (I believe, impossible) to name a case of 'thought' that is governed absolutely by 'external' stimuli. The organism, after all, does the responding. Here we have another instance of elementalism derivative from the absolute true-false dichotomy: namely, the sharp division between organism and environment. Curiously enough, a detailed analysis of the authors' theory would show that, contrariwise, the context which the authors can, in their theory, permit to the 'thought' function is so thin that 'thought' and 'stimulus' become completely identified.

'So far as we are thinking about or referring to certain definite things our behaviour in all probability will be only appropriate (i.e. our thoughts true) in so far as it is determined by the nature of the present and past stimuli we have received from those things and things like them. So far as we are satisfying our needs and desires a much less strict connection between stimulus and response is sufficient . . . To this partial independence of behaviour

we still choose to use the term *truth*, the term becomes a function of the scope of context chosen and is not an absolute value adhering directly to an absolute 'thought'. Thus the true-false dichotomy loses its absolute hold, and all language, including the 'scientific', becomes in a sense metaphor,³⁷ the scope of which may be more or less delimited.

ADDENDUM

The paper 'Elementalism: The Effect of an Implicit Postulate of Identity on I. A. Richards' Theory of Poetic Value' is a by-product of my work on a doctoral dissertation, entitled *The Problem of Poetic Truth*. This dissertation I hope to complete and present to the faculty of the University of California during 1943. It will examine the effects which an identity postulate has had on the development of literary theory from the Greek day to the English romantic period. It will neglect contemporary literary theory, but the present paper on I. A. Richards indicates that an identity postulate is still effective. I have in hand a more detailed and comprehensive study of Mr. Richards' works from this point of view, but shall be unable to complete it until after conclusion of this historical study.

The thesis maintained in the historical study may be briefly summarized: Much traditional theory of literature has been shaped by a postulate of identity embedded in the philosophical language which subsequent generations have inherited from the Greeks. Systematic literary theory of the 'rational' sort originated in Greek culture to express (as with Plato) or to resolve (as with Aristotle) a quarrel between Greek philosophy and Greek poetry—notably the Homeric representation of the gods. The focus of both the theory and the quarrel was the problem of 'poetic truth': whether poetry should be evaluated as 'true' or as 'false' according to the presuppositions of the philosophers' 'science'. But the philosophers' epistemology revolved about a postulate of identity. Thus at their inception, many traditional formulas concerning the 'nature of poetry' were shaped by the force of an identity postulate. This postulate was still implicitly present when these formulas were used by English critics of the seventeenth, eighteenth, and nineteenth centuries. The formulas in question speak of 'imagination', 'imitation of nature' . . .

It was Alfred Korzybski's *Science and Sanity* which called my attention to the pervasive control which a postulate of identity has exerted over traditional language structure and hence over our traditionally formulated evaluations of many matters. I consider that the work which I now have in progress offers confirmation of his formulations at a number of points.

Experience with the applicability of a portion of general semantics to my own

(from stimulus) is due the sometimes distressing fact that views, opinions and beliefs vary so much with our differing moods. Such variation shows that the view, belief, or opinion is not a *purely intellectual product*, is not due to *thinking in the narrower sense of response that is governed by stimuli* . . . (My italics PLC, pp. 87-88.)

'Only that part of the cause of a mental event which takes effect through incoming (sensory) impulses or through the effects of past sensory impulses can be said to be thereby known.' (PLC, p. 89)

'(W)hat is said is only in part determined by the things to which the speaker is referring.' (MM, p. 126)

³⁷ This is the position which Richards begins to take after 1933, but see note 2, above.

study of literary theory suggested that Korzybski's formulations might be useful to my students in their studies. Since 1941 I have presented a few of these formulations to classes in remedial English and in philosophy. In the study of English, students are sometimes defeated because they do not know how language functions in their lives: they expect the impossible, or else expect nothing, of language. Further, the notion—essential to the study of grammar and syntax—that words may map the uses of other words [self-reflexiveness], is foreign to them. These blockages in the path of learning may be removed by knowledge of general semantics principles.

In the teaching of philosophy, general semantics has somewhat similar uses. In addition, its formulations concerning 'neuro-semantic environment' and 'time-binding' prove a practicable means of orienting students to the history of philosophy and of culture in general. Its formulation of the relation between language and non-verbal facts and actions provide a further useful orientation for beginning students of philosophy: they learn not to expect a necessary, immediate connection between verbal philosophy and non-verbal living, and yet they learn to watch for the non-verbal facts and actions which 'philosophy' has recorded, directed, or replaced by a wish-fulfilment process. Likewise, in learning how words may map other words, they become less lost in dealing with abstract studies.

To students generally, especially valuable is the fact that, by the *not-all* principle formulated in general semantics, they learn to stand less unsteadily between the two horns of a cultural dilemma: blind faith in 'ideals', and cynical denial of 'ideals'. Almost equally valuable is their freeing from a consequence of hypostatization: a tendency to deny portions of experience which come under a label—say 'physics'—that is different from the label—say 'history'—of the subject in which they assert their life interest. General semantics is no panacea. But some of the benefits described the students do receive: They say so, and such examinations as I have devised indicate that they say so rightly.

Non-verbal demonstrations may be used to support and interpret the formulations of general semantics; in fact, they are necessary if the students are to receive a practical understanding. Such demonstrations are easily devised: The effect of our semantic environment upon our actions is easily illustrated with an unexpectedly defective chair or with a parlor trick. The difference between non-verbal 'fact', description of 'fact', and inference may be demonstrated by throwing a piece of chalk at a student, getting his inferential statement of what happened, opposing another inferential statement of the instructor's own, and then obtaining a 'factual' report of the incident. From such trivial demonstrations the instructor may pass to discussion of issues not so easily given non-verbal demonstration in the classroom. But the basic points may be demonstrated, in laboratory fashion. After all, many relations between language and fact are open to common-place demonstration; yet, though important, they are overlooked and should be brought forcibly to attention.

JOY AND FREUDE

A COMPARATIVE STUDY OF THE LINGUISTIC FIELD OF PLEASURABLE EMOTIONS IN ENGLISH AND GERMAN *

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(SUMMARY)

The basis for this paper is my book, *Joy and Freude*, which will appear in print very soon. This investigation is intended mainly as a contribution to linguistic science and may also serve as an aid to psychological research on the theory of emotions. Chapter I serves as an introduction to a new type of semantic research and contains a critical survey of the work done so far in this field, with particular emphasis on Jost Trier.

The concepts 'field' and de Saussure's 'articulation' (Humboldt's 'Gliederung') are discussed in detail. Trier's controversies with other scholars are subjected to a critical analysis, and other conceptions of the semantic field are scrutinized in order to present a complete picture of the present state of research.

De Saussure's clear distinction of 'linguistique synchronique' and 'linguistique diachronique' is accepted, and the reasons for making a non-historical study of living English and German in the field of pleasurable emotions are presented in detail. Trier's theory of distinct internal and external boundary lines of the field is shown to be untenable. An entirely new method of 'field' research is recommended, based on the nature of the linguistic material as well as on the research of psychologists and of scholars such as Scheler, Husserl, Klages and Geiger.

Never losing sight of the totality of the field, the analysis of the linguistic material is carried out in Chapters II-VI, each of which represents a different aspect.

Chapter II is concerned with *depth gradation* in line with William Stern's 'personal dimension of depth' and Scheler's 'Tiefenschichtung der Gefühle'. Chapter III deals with emotional *intensity*, i.e. the distance from the feeling threshold. In Chapter IV the polarity *kinetic-static* is investigated. In Chapter V the discussion of *temporal reference* to future and past is linked with the closely related polarity tension-release. For the polarity described in Chapter VI the new linguistic terms *directional* and *non-directional* had to be coined because of the contradictory definitions of the customary terms 'objective-subjective' and 'intentional' and 'non-intentional'. Directional feeling is concerned with an object (*Gegenstand*) of feeling; non-directional feeling has no such reference. The distinction between 'directional' and 'causal' is emphasized, though

* Professor Reuning's book with the above title was published in the autumn of 1941 and is distributed by the Swarthmore College Bookstore (xii + 142 pp.). Since this book is now in print and richly deserves reading in its entirety, we publish here the author's summary instead of the full text of his Congress paper. I have followed the author's own use of quotation marks and italics and have not introduced the use of quotes as an extensional device with such terms as 'emotion', 'concept', etc.—*Editor*.

it is not always made in language. The objects of directional feeling are grouped as (1) feelings, (2) objects in general, (3) mood-characters of objects, (4) persons.

Throughout the investigation striking differences between English and German are presented, and occasional reference is made to other languages. These differences are found in the vocabularies proper, in the use of word complexes (some of them filling 'gaps' in a vocabulary), in syntax, and in intonation. In order to study the structure of the field as a whole, the words for pleasurable emotion have been grouped and re-grouped on the basis of their emotional range. Certain generalizations concerning the comparative emotional value of German and English words on the one hand, and of the Germanic and Romance vocabulary in English on the other have been modified. Relations between language and national character are discussed, though with great caution, to avoid hasty generalizations.

Other problems, briefly discussed, are: (1) clarification of psychological terminology; (2) aesthetic problems in the field of poetic theory and style; (3) importance of similar studies (a) in other semantic *fields*, (b) in other languages, (c) of individual authors; (4) historical studies on the basis of descriptive analysis of semantic fields.

FOOTNOTE TO RESEARCH ON DRAMA AFTER READING SCIENCE AND SANITY

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PART I

In 1939 the University of Chicago Press published in résumé the results of my research in the field of drama.¹ The work purports to establish norms (distinctive characteristics of content and form) for naturalistic drama as derived from Émile Zola's theoretical statements.

Somewhat later, in 1940, as a summing up of previous research, I made a comparative study of *realistic* and *naturalistic* norms, with particular reference to the drama. Norms for *expressionistic* drama had, in 1930, been established with satisfying thoroughness by C. E. W. L. Dahlström of the University of Michigan in his *Strindberg's Dramatic Expressionism*.

My approach to the drama has been, throughout the years, what might be called 'sociological'. The drama, as 'art for art's sake', has never interested me, especially. I have felt always that its importance and value could be measured in terms of its relation to the life which it aims to represent. Naturally, this approach has led to an interest in science, 'philosophy', and other fields of knowledge which have affected life—hence, literature. As for literature, *per se*, such an approach places the emphasis on *content*—what the work expresses—and reduces *form* to a secondary position.

Part II of this paper, entitled 'Differentiae in Realistic and Naturalistic Drama,' is properly documented. What I have to say here supplements that paper in the light of *Science and Sanity* by Alfred Korzybski.²

In the researches made I have found evidence that the differences between realism and naturalism (both in the novel and in the drama) spring mainly from a basic difference in the kind of content expressed. There is, of course, a correlation between the kind of content expressed and the general state of knowledge of the periods which gave rise, first, to realism, and later, to naturalism. In the researches I confined my investigations strictly to literature: theory, works, and criticism.

* * * * *

The literature of the past one hundred years falls into three broad divisions: realism, naturalism, and expressionism. How this came into being is another story. The contributing factors are, of course, cultural, social, economic, political. But it seems apparent that the advance in the physical as well as in the biological sciences shows a striking causal relation with the progressive re-evaluation of the status of men, both as individuals and as members of society. *Science and Sanity* suggests an interesting way of describing this evolution.

¹ *Zola's Naturalistic Theory with Particular Reference to the Drama*.

² Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Lancaster, Penn.: The Science Press Printing Co., 1933). References hereinafter made to the First Edition, Third Printing.

Let us glance at the status of the 'individual' in recent-modern times. Start with the time of the great Balzac. This was, of course, before the advent of experimental science in medicine and psychology, as we know it today.

In the days of Balzac you could have catalogued a man neatly—no overlapping. You could have labelled him. With one word. 'Bourgeois'. 'Miser'. 'Roué'. 'Courtesan'. 'Peasant'. Etc. In the Preface to *The Human Comedy* which was written in 1842—just one hundred years ago—Balzac makes the following statement basic to his theory of art:

Does not society make of man, in accordance with the environment in which he lives and moves, as many different kinds of men as there are different zoological species? The differences between a soldier, an artisan, an administrator, a lawyer, an idler, a scholar, a statesman, a merchant, a sailor, a poet, a pauper, and a priest are quite as considerable as those that distinguish the wolf, the lion, the ass, the crow, the shark, the seal, and the sheep.

In this Preface, Balzac makes reference to the great naturalists of his time, and, apparently, considers his pronouncements to be in accord with their scientific findings. The emphasis was then on classification of knowledge, and Balzac, true to his period, regarded it as his duty to give 'typical' case histories of human 'species' as observed in contemporary society. He was interested in 'virtues', in 'vices'; he wanted to preserve what he considered to be characteristics common to groups—vocational and professional. This purpose required the use of a certain literary technique—that technique which has become known as the *realistic technique*—by which such common characteristics could be abstracted from everyday life as observed. Selection of data was, of course, all important to the task. The emphasis was on *similarities*. This was the conscious method employed by Balzac, as pointed out by outstanding Balzacian scholars. In spite of the way in which his artistic talents ran away from the rigid consequences of his theory, an examination of Balzac's works confirms the fact that Balzac, the artist, was consistently careful that his details be harmonious with the central keynote of his work. Conflicting or non-conforming elements which might confuse the picture are not characteristic of Balzac's portraits because Balzac was interested in 'kinds of men'.

So, in the literary works of Balzac and other realists of that time, the individual was represented as a member of a class. The literary type could not escape the limits of the descriptive label. The individual, so characterized, was static, for where there is *change* the 'type' is broken. Nor could the environment be shown to change, for the accepted formula of the time was: change the environment, change the 'species'—change the label. The type lived, necessarily, in a 'closed universe'.

Soon after Darwin's *Origin of Species* (1859) was published, the interest shifted from classification of knowledge to the discovery of cause and effect relationships in nature. Again literature followed science. Balzac, the realist, had recorded what had been observed and classified—that which *had become*. But in the second half of the nineteenth century attention turned to that which *was becoming*. A slow motion notion of *change* as a kind of deterministic evolution became the accepted formula for life. Personal observation alone was no longer considered a sufficient criterion for character delineation in literature, according to the naturalistic school which domi-

nated the Continent at that time. Personal observation had to be supplemented by controlled observation—by science. An observed phenomenon had significance for literature, Zola insisted, only when it had relevance to a (then) generally accepted causal relationship. The 'individual' was in the middle, so to speak, with heredity (as such) and environment (as such) back of him, and a deterministic environment—to which he was reciprocally related—surrounding him. In the outstanding literary works of the period a man was 'defined' as much by his parents and his grandparents sitting idly by, as much by the clothes on his back, the company he kept, the house he called home, as he was by his appearance, his words, and his actions. It was no longer considered 'true to life' to portray conduct as 'consistent' within itself. A human being could be both brutal and tender, both stingy and generous, both gay and surly—today 'good', tomorrow 'bad', etc. The two-valued orientation³ of the realists (*fitting* the picture of the 'type' or *not fitting* the picture of the 'type') was the target of attack by Zola. The literary 'type' was broken. And this is what Strindberg was driving at, when in 1888, he wrote that men should be portrayed as 'characterless' in literary works.

The limits of the fence around the 'individual' were being pushed outward, certainly, but the fence was still solid. The certainty of science was at an all-time high. It was the day of newtonian mechanics. The universe was pictured as a vast machine. The stuff of the fence was now a cock-sure restrictive determinism of which men made a new god. 'Absolute determinism dominates everything,' Zola never tired of repeating in the 1880's, following the scientist Claude Bernard, the philosopher Comte, and the historian Taine. Zola was an optimist, and fervent. 'Now that it is established that fixed laws govern the human body,' he wrote, 'we can say without fear of error that the laws governing thought and passion will be formulated in their good time.' And he clinched the matter with this punch-line: 'The same determinism that regulates the stone in the road must regulate the brain of man.' Zola was confident that with increasing knowledge the mysteries of human behavior would become transparent, predictable, and so controllable.

But, with the advance of science, we know, instead, that human conduct is indefinitely complicated and not rigidly predictable as the determinists had assumed. Zola had, of course, predicated his hopes on the newtonian laws of mass and motion which were 'fixed'—invariable. Zola could not predict that with increasing knowledge (which came with the investigation of factors which would not fit into these fixed laws—phenomena which have to do with light, electromagnetism and electrons) would come, finally, the fully developed doctrine of relativity. The multiplicity of cause-effect relationships in respect to any single incident in the life of an individual is known now to be boundless, actually without limit. Such an incident is not two-valued (white or black, 'good' or 'evil', *this* cause and *that* effect), nor even few-valued, but is *infinite-valued*.⁴ An 'infinity' of causes is operative on a single incident; an 'infinity' of consequences is the result of a single incident. To put it mildly, the individual becomes a process—living, changing, indeterminate—incessantly interacting with a complex of complexities. So that it is no wonder that George Herbert Mead, the great pragmatic

³ Korzybski, *op. cit.*, pp. 85-98.

⁴ Korzybski, *op. cit.*

philosopher, turned his back on 'individual psychology' and used the expression 'the social self' to describe the social interrelational nature of human reactions and behavior.⁵

In literature, it was Luigi Pirandello, called by a *New York Times* reviewer 'The Einstein of Drama', (June 19, 1932) who gave us, probably, our finest examples of conduct as interrelated with the changing social scene. Here's how *The Father* in his *Six Characters in Search of an Author* puts it:

For the drama lies all in this—in the conscience that I have, that each one of us has. We believe this conscience to be a single thing, but it is many sided. There is one for this person, and another for that. Diverse consciences. We have the illusion of being one person for all. But it isn't true. We perceive this when, tragically sometimes, in something we do, we are, as it were, suspended, caught in the air on a kind of hook. Then we perceive that all of us was not in that act, and that it would be an atrocious injustice to judge us by that action alone, as if all our existence were summed up in that one deed. Now you understand the perfidy of this girl. She surprised me in a place she ought not to have known me, just as I could not exist for her, and she now seeks to attach to me a reality such as I could never suppose I should have to assume for her in a shameful and fleeting moment of my life.⁶

And here's how Mead puts it in *Mind, Self, and Society*:

We come away from an interview with a realization that we have left out important things, that there are parts of the self that did not get into what was said. What determines the amount of the self that gets into communication is the social experience itself. Of course, a good deal of the self does not need to get expression. We carry on a whole series of different relationships to different people. We are one thing to one man and another thing to another. There are parts of the self which exist only for the self in relationship to itself. We divide ourselves up in all sorts of different selves with reference to our acquaintances. We discuss politics with one and religion with another. There are all sorts of different selves answering to all sorts of different social reactions . . . Normally, within the sort of community as a whole to which we belong, there is a unified self, but that may be broken up.⁷

Not very different, are they?

No, we can no longer 'see' a fence!

* * * * *

And now I should like to sum up:

The realists (about 1835 and after) relied upon observation of contemporary society, but in developing and combining the elements of the literary work (characters, plot, dialogue, setting, and costumes) the author was more concerned with similarities than with differences. The two-valued (static) orientation (fitting or not fitting the 'type') necessitated the *modus operandi* (selection of details to conform with a given keynote).

The naturalists (about 1880 and after) also took their subject matter from contemporary life, but insisted that variable conduct and character evolution be 'ex-

⁵ G. H. Mead, *Mind, Self and Society* (Chicago: The University of Chicago Press, 1940). See especially Part III, 'The Self,' pp. 135-226.

⁶ Luigi Pirandello, *Three Plays* (New York: E. P. Dutton and Co., 1922), pp. 23-24.

⁷ Mead, *op. cit.*, pp. 142-43.

plained' by hereditary causes (as such) and (or) environmental causes (as such). The elements of the literary work (characters, plot, dialogue, setting, and costumes) were developed and combined for the sake of this end. Again the orientation necessitated the *modus operandi* (the analytical method of exposition as explained in Part II of this paper). The newer orientation was restricted and limited by the science and philosophy of that time.

Some more recent developments in the drama, including expressionism, have shown a tendency to break down both elementalism and absolutism.⁸ Relativism has invaded literature. And I venture the opinion that the drama has unlimited possibilities for the representation of the infinite-valued orientation as expounded by Korzybski because what cannot be said in words can, at least, be expressed and communicated by means of dramatic representation. The dramatic field is wide open for students of Korzybski.

PART II

DIFFERENTIAE IN REALISTIC AND NATURALISTIC DRAMA

I can present here only in briefest form the conclusions reached in the studies of realistic and naturalistic drama discussed.

In order to establish norms for realistic drama, it seemed advisable to go first to the works of Balzac, Flaubert, Maupassant, Alphonse Daudet, and Brunetière, since Continental realistic drama follows chronologically and methodologically in the wake of the French novel and literary criticism.

The first reservoir of information was to be found, of course, in the purely theoretical statements of the authors studied. This, correlated with their works and their criticisms of other works, forms the basis of the judgments made. If, in this paper, the theoretical statements seem to be stressed, please bear in mind that I am assuming a more general knowledge of the works of the authors mentioned. It would seem, moreover, that the theoretical statements made by an author deserve an important place in clarifying his aims and accomplishments.

The first theoretical statement of major importance is Balzac's *Avant-propos* to the *Comédie humaine* (1842). In it are found norms for Balzacian realism as follows:

1. The object of imitation is 'man and his life', as exhibited in contemporary society.

2. The object of imitation (human conduct) must include, also, the material manifestations of life—*things*.

3. 'Men, women, and things' must be represented as 'typical', (Balzac is interested in 'kinds of men', in 'social species', in 'classes'; and he says that not only men, but the 'chief events in life are expressed in types.')

4. The object of imitation, therefore, is representative of something 'typical' which the author has 'logically' induced from his observations and knowledge of contemporary society. The first step in the literary *method* must, then, be observation of data.

5. The devices used to represent the object of imitation are accumulation of details along a given line, and harmony of such details to accord with some generalization. (Balzac says that he will 'collect signal examples,' that he will 'make a selection of the chief social events of his time,' that he will 'compose types made up of the

⁸ Korzybski, *op. cit.*, see index.

traits of several homogeneous characters.' And the late Professor E. Preston Dargan pointed out that this is exactly the 'conscious method' pursued by Balzac in his novels.¹

6. The end (or purpose) of the novel is to teach 'order, wisdom, and morality'.² There is thus no intention of and no claim to complete 'impersonality'. The novel should seek to portray 'a nobler world than that of history'. Art is thus on a higher level than 'reality'.

It follows from this that:

A. The *content* of the literary work is simply a particular illustration of a generalization which relates to characters and situations, i.e. a particular illustration of something which is considered by the author to be generally exhibited in contemporary society.

B. So far as *form* is concerned, the generalization prescribes the form of the literary work since the elements (characterization, description, and plot) are developed and combined for the sake of illustrating the generalization. Form, therefore, has no independent significance.

C. As for *method*, the author relies (1) on observation of data, (2) on selection of data, and (3) on harmony of data to accord with a given keynote. This, of course, to achieve 'typicality'.

D. And since the *end* of the novel is to teach, the work is 'objective' and 'impersonal' only insofar as the object in nature is accurately imitated, but it is not 'objective' nor 'impersonal' insofar as criticism of the object represented is evidenced in the work.

So much for Balzac's theoretical pronouncements in the *Avant-propos*.

How far do other outstanding 'realists' agree with Balzac on his major points? An analysis of the critical statements made by Flaubert, Maupassant, Alphonse Daudet and Brunetière indicates that these authors have the following opinions in common with Balzac:

1. The object of imitation is 'man and his life,' as exhibited in contemporary society.³
2. Observation of life is basic to art.⁴
3. Art is not, however, an attempt at photographic reproduction of the object in nature.⁵
4. The author adds 'something' which elevates art to a position above 'reality' as observed.⁶

¹ E. Preston Dargan, W. L. Crain and Others, *Studies in Balzac's Realism* (Chicago: The University of Chicago Press, 1932), pp. 1-11.

² I have not documented from the *Avant-propos* as this document must be read in its entirety.

³ Gustave Flaubert, *Correspondance* (Éd. déf.; Paris, 1926-33) IV, 183. Cf. *ibid.*, V, 111. Guy de Maupassant, *Pierre et Jean* (Paris, 1888), pp. viii-xiii. Alphonse Daudet, *Pages inédites de critique dramatique* (Éd. déf.; Paris, 1922), p. 207. Alphonse Daudet, *Roman* (Éd. déf.; Paris, 1899), II, iii. Léon Daudet, *Alphonse Daudet* (Paris, 1898), p. 226. Ferdinand Brunetière, *Le Roman naturaliste* (Paris, 1896), pp. 23-26.

⁴ *Ibid.*

⁵ Flaubert, *op. cit.*, VIII, 349, 381. Cf. *ibid.*, p. 374. Maupassant, *op. cit.*, pp. viii-xiii. Léon Daudet, *op. cit.*, p. 297. Brunetière, *op. cit.*, pp. 23-26.

⁶ Flaubert, *op. cit.*, VIII, 281. Maupassant, *op. cit.*, pp. viii-xiii. Léon Daudet, *op. cit.*, p. 226. Brunetière, *op. cit.*, pp. 7, 23-26, 119-20.

5. Art represents an 'idea' or an 'ideal' experienced by the author which goes in the direction of something 'universally human'.⁷

6. Selection (choice and elimination) of data discoverable in contemporary society is the method proposed whereby an author may accomplish the representation of the 'idea' or 'ideal' experienced by him;⁸ with the result that

7. The primary elements of the literary work (characterization, description, and plot) are expressive of 'typicality', since, combined, the work of art as a whole is illustrative of the 'idea' or 'ideal' experienced by the author.⁹

The main point of difference between these authors pertains to the end sought in art. Balzac, alone, argues for a strictly ethical end, i.e. instruction. Flaubert argues for an aesthetic end,¹⁰ but he, with the others, insists that art should express something 'ideal', something 'universally human'.¹¹ Maupassant¹² and Daudet¹³ place some emphasis on 'truth' as an end, but 'truth' as defined by them appears to be an 'aesthetic truth'. Brunetière is explicit in stating that the end of art is 'truth', and 'truth' is for him an 'ideal truth' which is unrelated to instruction as an end.¹⁴ These differences—roughly speaking—represent only two main points of view: that expressed by Balzac and that by Brunetière, since the 'aesthetic truth' of Flaubert, Maupassant, and Daudet is very closely akin to the 'ideal truth' of Brunetière.

From this difference ensues a difference in the nature of the 'idea' or 'ideal' expressed in the work. A work may express (by particular illustration) something which an author considers to be 'universally human' plus the author's criticism thereof, or, it may simply express the 'idea' or 'ideal' experienced by an author with as high a degree of 'impersonality' as is possible in art.

We turn now to the major French realistic playwrights: Dumas *filz*, Brieux, and Augier—the 'social' dramatists.

Dumas *filz* follows, both in theory and in works, the theoretical formula of Balzac.¹⁵ This is true also of Brieux.¹⁶ Augier is the least communicative of this group concerning his theory of art,¹⁷ but his plays exemplify to a nicety the objectives and methods of Balzac.

The theories and works of Henry Becque present the most interesting object of study in nineteenth century French drama. Becque wrote voluminously in a critical vein in a tireless effort to set himself apart both from the social dramatists of France

⁷ *Ibid.*

⁸ Flaubert, *op. cit.*, p. 224. Maupassant, *op. cit.*, pp. viii-xiii. Brunetière, *op. cit.*, pp. 23-26.

⁹ Flaubert, *op. cit.*, IV, 435. Alphonse Daudet, *Roman*, VIII, ix. Brunetière, *op. cit.*, pp. 7, 134-36.

¹⁰ Flaubert, *op. cit.*, IV, 183; VII, 351; VIII, 397.

¹¹ Flaubert, *op. cit.*, VIII, 224.

¹² Maupassant, *op. cit.*, pp. viii-xiii, xvii-xxv.

¹³ Alphonse Daudet, *Notes sur la vie* (Paris, 1899), pp. 84, 88, 143. Alphonse Daudet, *Pages inédites . . .*, p. 207.

¹⁴ Brunetière, *op. cit.*, pp. 7, 23-26. 119-20.

¹⁵ Alexandre Dumas *filz*, *Théâtre complet* (Paris, 1899), III, 3, 27, 30, 31, 211. Cf. *ibid.*, pp. 28, 29.

¹⁶ Eugene Brieux, 'Préface à mon théâtre complet,' *Revue Hebdomadaire*, XXX (1921), 126. Cf. 'Le Métier dramatique,' *Revue Bleue*, XVI (1901), 291; Eugene Brieux, *La Robe Rouge* (New York, 1925), pp. xxi-xxii, xxvii.

¹⁷ The only theoretical statements made by Augier seem to be contained in his preface to the complete works of Labiche: Eugene Labiche, *Théâtre complet avec une préface par Emile Augier* (Paris, 1878).

and from the Zolaists, whom he despised.¹⁸ In spite of anything he could say, however, his name was linked by many with naturalism. An important body of critics did recognize Becque's claim to independence and originality, and these proclaimed him a leader and an innovator.¹⁹ What seems clear from the evidence is that Becque does deserve a place by himself in nineteenth century French drama.

The break between Becque and the social dramatists is obvious. Instruction as an end was ruled out by Becque, who was probably the first playwright of the nineteenth century to use the realistic technique as objectively as possible.²⁰ He belongs in this respect in the tradition of Flaubert²¹ and Maupassant.²² But his conception of the relation of art to 'reality' is exactly that of the realistic authors studied and diametrically opposed to that of the naturalists, as will be apparent. Becque, as a matter of fact, goes further than the realists discussed in demanding that the artist represent the very highest degree of 'universality' possible. The really great author, he asserts, succeeds in portraying 'general traits' which supersede even the 'special traits' of his epoch.²³ And with *Les Corbeaux*, Becque exemplifies the Balzacian method with careful precision. His vultures are more vulturous than 'real' vultures, as Sarcey puts it.

It is apparent that Becque should be classed as an 'objective realist' in contrast with the 'moral realists' of his time.

We come now to naturalism.

The essential features of naturalism, as understood today, can be stated in practically the same terms as those advanced by Émile Zola about 1880. Naturalism, as defined by Zola, is, like realism, a technique whereby *la vérité* can be represented *par l'art*. But Zola's definition of 'truth' is quite different from that of the realists. Actually, therefore, the end sought by the naturalists is different from that sought by the realists. It follows that the methods employed will, in each case, be different.

'Truth' for the realist was found in the identification of any particular thing with some 'class', and the more general was this 'class', the more of the 'truth' was captured. The realist aimed to represent *being*—that which *had become*. The naturalist, on the contrary, aimed to depict not that which *had become*, nor yet that which *is*, but that which *is becoming*. And this is the naturalist's point of departure.

Zola proceeds on the premise (derived most directly from Taine²⁴ and Claude Bernard²⁵ that all things in nature are subject to orderly change. Basic to his theories is the belief that everything submits to *the* great evolutionary current which

¹⁸ Henry Becque, *Théâtre* (Paris, 1924), II, 339. Cf. also Henry Becque, *Souvenirs d'un auteur dramatique; Études d'art dramatique* (Paris, 1926), pp. 105, 130, 180; Henry Becque, *Conférences. Notes d'album. Poésies. Correspondance* (Paris, 1926), pp. 63-64; Henry Becque, *Querelles littéraires* (Paris, 1925), pp. 94-96.

¹⁹ Jules Lemaitre, *Impressions de théâtre* (10^e sér.; Paris, 1898), pp. 303-6. Anon., 'Revue dramatique,' *Revue des deux mondes*, CII (1890), 699-702. Francisque Sarcey, *Quarante ans de théâtre* (Paris, 1902) VI, 345-56, 372.

²⁰ Becque, *Conférences*, pp. 40, 63-64, 79-81.

²¹ Flaubert, *op. cit.*, II, 460-62; III, 61-62, 149; V, 227-28.

²² Maupassant, *op. cit.*, pp. xxiv-xxv.

²³ Becque, *Souvenirs*, pp. 166, 188, 251-53, 256.

²⁴ Émile Zola, *Le Roman expérimental* (XLI, 1928), 182. Émile Zola, *Thérèse Raquin* (XXXIV, 1928), 245. Émile Zola, *Le Naturalisme au théâtre* (XLII, 1928), 64, 89. Reference throughout this study is made to the definitive edition of the works of Zola, annotated with commentaries, criticisms, and bibliographies by Maurice LeBlond (50 vols. Paris: F. Bernouard, 1927-29).

²⁵ Zola, *Roman*, p. 11. Cf. *ibid.*, pp. 21-24. See Sondel, *Zola's Naturalistic Theory with particular Reference to the Drama* (Priv. ed. distrib. by University of Chicago Libraries, 1939), pp. 20-38.

never deviates from the laws of cause and effect. These 'fixed laws', according to Zola, refer not only to the natural inorganic phenomena but to the human organism and the social milieu as well.²⁶ Man is, in short, a product of his heredity (as such) and his environment (as such), and though he is reciprocally related to the environment, both man and the environment are subject to *the* laws of cause and effect. This does not mean that man is impotent. Knowledge is power in the hands of man. Man is a potent force. To *know* the laws of change as it relates to the human organism and to the surrounding milieu is to be able to predict change, and prediction means control.²⁷ It is on this conception of determination that Zola proceeds.

All that Zola says concerning his theory of naturalism may be subsumed under the slogan '*la vérité par l'art*'. '*La vérité*' = '*la vérité scientifique*', which is never 'absolute'. It is a variable in terms of advancing experimental knowledge, which is knowledge of 'material' causes of the phenomena of nature.²⁸

Much has been made by critics antagonistic to Zola of his analogy between experimental science and the experimental novel. It should be pointed out that Zola considered the relation of the experimental novelist to the experimental scientist strictly one of dependence.²⁹ The author's purpose is to represent 'scientific truth'—knowledge concerning relationships in human conduct.³⁰ While Zola calls the invention of the literary work an 'experiment' there is no experiment nor is there any kind of verification in the scientific sense implied.³¹ All that is demanded is that the experimental novelist rely for his point of departure on the accepted scientific theories of the time and that he illustrate or demonstrate a 'principle' by the invention of the work. The author, according to Zola, uses what Bernard calls demonstrative reasoning employed by the man who knows, or believes he knows, in order to instruct others.³²

The naturalistic method must be rigorously 'objective'. The representation of 'scientific truth' is the end, and there is no other criterion admitted than that of 'facts' as established by experimental science.³³

But how will the author proceed? What are the aesthetic steps? In discussing the analogy between literature and science Zola refers only to the novel, but he is firmly convinced that the method is applicable as well to the drama.³⁴ How does the playwright represent the reciprocal relationship between man and his milieu? How does the playwright represent *conduct and the reasons for conduct*? Zola discusses the problem primarily in terms of 'object' and 'manner of imitation'.

The object of imitation is human conduct plus the reasons for the conduct, and Zola considers conduct as being complex and variable in nature. The primary element of the work is, therefore, character, and the word *character* implies both cause (or causes) and effect.³⁵

Plot (or the combination of incidents) becomes a consequence of characters.³⁶

²⁶ Zola, *Roman*, pp. 19, 21, 22, 23, 27, 28, 43, 49, 92, 115, 119.

²⁷ *Ibid.*, pp. 24, 27, 28, 31, 32.

²⁸ *Ibid.*, p. 36. Cf. Söndel, *op. cit.*, pp. 20-36.

²⁹ Zola, *Roman*, pp. 37-38, 48.

³⁰ *Ibid.*, p. 103.

³¹ *Ibid.*, pp. 32, 48, 102, 116.

³² See Söndel, *op. cit.*, p. 50.

³³ Zola, *Roman*, pp. 32, 36, 41, 42, 103, 104, 105. Émile Zola, *Nos Auteurs dramatiques* (XLIII, 1928), 138. Zola, *Le Naturalisme au théâtre*, p. 250.

³⁴ Zola, *Roman*, p. 49.

³⁵ Zola, *Le Naturalisme au théâtre*, pp. 191-94. Cf. *ibid.*, p. 87; *Nos Auteurs dramatiques*, p. 28.

³⁶ Zola, *Roman*, p. 122. Cf. *ibid.*, pp. 102, 121; Zola, *Le Naturalisme au théâtre*, p. 26.

A dramatic situation is any 'fact' produced by the characters, and Zola defines 'fact' as an observed change. But the 'fact' is nothing in itself (either for science or for literature).³⁷ A drama must represent not only a sequence of observed changes, but must represent the causes as well. This is the fundamental tenet of naturalism. The character must be individualized by his particular heredity and environment and his conduct must, at the same time, demonstrate or illustrate a natural 'law'.³⁸ How can this be done? What are the means? Zola is not concerned with artistic media. What, rather, he asks, are the means of analysis?

To 'analyze' a character, according to Zola, is *to show the causes for whatever changes take place*. And this can be accomplished in the dramatic work by these means: words, actions, physical surroundings (*décor* or spectacle), other characters (agents who are used for the sake of indicating the social position of the character analyzed), and costumes.

Language is considered strictly as a means of analysis. Language as an end in itself is completely ruled out by Zola. Grammar, rhetoric, beautiful language, style, have no place in the exposition of Zola apart from utility in the representation of causal relationships in conduct.³⁹

Actions constitute a highly dramatic means of analysis of conduct. The novelist analyzes slowly, with a minuteness of detail in which nothing is forgotten. The playwright, by the use of words and actions, may analyze as briefly as he wishes. One word, one cry, one movement is sufficient often to sum up a whole character.⁴⁰ (Actions should not be confused with plot. As has been said, Zola treats *intrigue* negatively, making *noeud* and *dénoûement* consequences of character.)

The rôle of setting as a determining factor in the analysis of character is one of the essential features of naturalism. The novelist does not separate his characters from their natural surroundings, physical or social. The milieu is reconstructed by descriptions in the novel. The milieu must also be reconstructed in the play. And the drama, Zola states, has a natural advantage over the novel in this respect. One glance at the stage and the story is told: These characters are poor. These are miners. These peasants. These cultivated and wealthy. These wealthy but ignorant. The stage setting must explain the economic and cultural status of the characters.⁴¹

Classed together with language, actions, and stage setting is yet another means of character analysis: that of costumes. The personality and social position of a character may be expressed through his attire.⁴² A character may be represented at the beginning of a play as having dignity and social standing. By a series of changes in costume the disintegration of this character can be shown more simply and more effectively than by the use of words. The costumes speak for him. The whole drama of drunkenness can, for example, be shown by a series of changes in costume. Costuming, used in this manner, becomes an important element in showing the interaction between characters and milieu.⁴³

Language, actions, setting, and costumes are absorbed, therefore, by character—

³⁷ Zola, *Le Naturalisme au théâtre*, pp. 191-94. Zola, *Nos Auteurs dramatiques*, pp. 36-37. Cf. Zola, *Roman*, pp. 23, 24, 36, 38, 50, 95, 100, 102, 119, 121, 122; Zola, *Le Naturalisme au théâtre*, pp. 16, 21, 26.

³⁸ Zola, *Nos Auteurs dramatiques*, pp. 36-37.

³⁹ Zola, *Roman*, pp. 124-25.

⁴⁰ *Ibid.*, p. 121. Cf. *ibid.*, p. 17.

⁴¹ Zola, *Le Naturalisme au théâtre*, p. 105. Cf. *Roman*, pp. 122-23.

⁴² Zola, 'Le Costume,' *Le Naturalisme au théâtre*, pp. 89-108.

⁴³ Emile Zola, *Mélanges, préfaces et discours* (L, 1929), 220.

all in the interest of the analysis of character. By these elements the playwright is enabled to express a judgment concerning the causes of the events represented. And if this judgment rests on the existing state of knowledge, the author has succeeded in representing '*la vérité par l'art*'.⁴⁴

The manner in which the dramatic work is executed is, necessarily, that of present representation (dialogue in the present tense). The exposition must be backward-looking as well as forward-moving. When heredity or environment is shown to alter the present dramatic moment in any way, the exposition becomes analytical. And this is necessary in order to show the causes which determine character evolution.⁴⁵

But, you will ask, what is the principle of unity in the naturalistic work? Zola makes short shrift of the discussion of unity. The unique purpose of the author is to express 'truth by means of art'. Therefore the principle of unity must be subsumed under 'truth'. A play is unified when it represents 'truth' in respect to human conduct, i.e. when it shows change as a result of causal factors, and when the cause and effect relationship expressed is in accord with the state of knowledge of the time.⁴⁶ And that is all.

This technique—this means of analysis—constitutes a method which is applicable to all subject matter and to all classes of people⁴⁷ (a point overlooked by many of Zola's critics).

Although some critics continue to hold Zola's analogy between literature and science in ridicule, it must be admitted that Zola expressed in theory a method exemplified in the naturalistic writings of Ibsen, Hauptmann, and Strindberg. The method is, of course, still in use to show character evolution as a result of hereditary and environmental causes. Zola, it will be remembered, defined 'truth' as relative to the state of knowledge. As long as 'causes' are believed to be 'known' the method will continue to be useful. Zola had implicit faith in science. He believed that with the advancement of science possibilities for prediction and control of human conduct would ensue. It was this which Zola had in mind when he wrote: 'We have the method. We must go forward.'⁴⁸ And by 'go forward,' Zola meant 'keep pace with science.'

The similarities and differences in these two techniques are already apparent.

The main similarity lies in the approach. Both the realists and the naturalists look out upon contemporary life for the object of imitation, i.e. for subject matter (content). The naturalist is essentially a realist in that he turns his gaze *outward* on 'real' life and attempts to represent what he observes. Both give precedence to *content* (over *form*). But here the similarity ends. The realist and the naturalist—looking outward—do not see eye to eye. The realist looks for 'generality' as induced from 'signal examples' of a 'kind' of life which he desires to imitate or represent, whereas the naturalist attempts to catch change on the wing. From this fundamental difference all others ensue.

Some realists and all naturalists have claimed to represent 'truth' in an 'objective' manner. Both must, it is true, start with observable data. Assuming that 'objectivity' is possible in a work of art [or anywhere else], the realist can be said to be 'objective' only insofar as he depicts what he observes accurately as he sees it.

⁴⁴ See Soudet, *op. cit.*, pp. 36-57.

⁴⁵ Zola, *Le Naturalisme au théâtre*, pp. 116, 239. Zola, *Roman*, pp. 102, 103, 116, 122, 126. Zola, *Nos Auteurs dramatiques*, pp. 239, 279. Zola, *Mélanges*, p. 209. Cf. T. M. Campbell, *Hebbel-Ibsen and the Analytic Exposition* (Heidelberg, 1922), p. 69.

⁴⁶ Zola, *Roman*, p. 102.

⁴⁷ *Ibid.*, pp. 216-17.

⁴⁸ *Ibid.*, p. 23.

When the work includes the author's criticism of what he believes to exist, and when, indeed, it goes beyond that and attempts to show how existing conditions should be changed, the realist obviously goes further and further from the goal of 'objectivity'. Many realists have made no claim, however, to 'objectivity'. Among these are the 'thesis' dramatists and the 'social' playwrights. The naturalist who represents a cause and effect relationship which is generally accepted at the time of writing believes that the analytical technique automatically shuts him out of the work, since, according to him, the work is dependent on extrinsic data and not on personal opinion.

In both cases the work illustrates a generalization which relates to conduct as exhibited in contemporary society. The work, in each case, is unified by the generalization represented. The nature of the generalization determines the technique which the author will use. The nature of the generalization must, in other words, determine the manner in which the 'elements' are developed and combined. And here will be found the essential difference. The generalization represented by the realist is static in nature. It is representative of 'typicality'. The devices the realist must use to represent 'typicality' are—necessarily—accumulation of details along a given line. The naturalist expresses a generalization which is a judgment concerning causality. It is necessary, therefore, for the author to use a technique which is both backward-looking and forward-moving. All changes instituted or experienced by the characters must be shown as results of causes which lie in heredity and environment (as understood in the light of the then commonly accepted scientific knowledge).

The differences in *content* (the kind of generalization which the work expresses) necessitate the differences in *techniques* used. The elements in the dramatic work are developed and combined in both techniques for the sake of the generalization expressed. The end in each case is different, the method in each case different.

PRELIMINARY NOTES FOR A SEMANTICS OF MUSIC*

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John Smith, visiting New York for the first time, is walking down noisy Sixth Avenue with his New York friend, Jones. Smith stops, puts his hand on Jones' arm, and asks: 'Did you hear that noise?'

Jones smiles tolerantly. 'What noise do you mean?'

'I mean that *weird* noise.'

Jones cocks his ear. 'I don't hear any weird noise. How do you mean—"weird noise"?''

'I mean that weird noise high above the rest.'

Jones laughs. 'Oh, there's nothing weird about that. That's just the whistle on a peanut roaster down the block.'

Suppose your car is not running well, and you take it into the repair shop. The garageman opens the hood and sticks his head in. He turns to you and says, 'I know what it is. Do you hear that noise?'

You hear the motor turning over. As you take your weight from the running board, the body squeaks. There is a faint whirr from the fan. You hear a whole context of sound, nothing unusual. So you ask him, 'What noise do you mean?'

He says, 'I mean that noise that goes: clickety-click—clickety-click—clickety-click. Can you hear it?'

Yes, now you *can* hear it.

On each of these occasions the first speaker succeeded in directing attention to what he was talking about, so that the object of discussion was extensionally defined for both parties. Notice that on each occasion the speakers were listening to the same context of sound. But from that same context one abstracted a sound that the other did not. If Smith had been looking *at* something, instead of listening *to* something, he could have pointed to what he meant. But in a context of sound there is no such easy device as pointing. He had instead to indicate limits within that context somehow. Your garageman abstracted from the context the *rhythm* of the particular noise that he wished to 'point to', and that worked. Smith, after a futile try at getting together with Jones by reference to *his own feeling about* the noise he was abstracting, finally gave directions according to the *pitch-relationship* between that particular noise and the rest of the sound-context; and that worked. Both Smith and the garageman succeeded in defining extensionally what they meant in spite of the fact that they could not simply 'point to it'.

When the context of sound is a musical composition, we are faced with a situation similar to these, though more complicated. Not only is the context of sound much more

* This paper attempts to discuss some of the implications for music of the formulations of Alfred Korzybski as found in *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

complex, but the affective factors in the musical experience may be powerful, and we are even more likely to answer the question, 'What noise do you mean?' as Smith first did, with words which only report how we felt about it. A musical discussion may go like this:

'Do you remember that *haunting* passage in Strauss' "*Heldenleben*"?'

'Haunting passage? What haunting passage? I don't remember any haunting passage.'

'Well-I-I—. The subject is dropped.'

Anyone who has attended a concert knows the violent disagreements that can ensue. People collect in groups at intermission to make expressive noises together. One group (as Mr. Hayakawa would say) is purring happily. 'Wasn't that new symphony wonderful? Wasn't it perfectly beautiful? Wasn't it marvelous!' In another corner are the growlers and snarlers. 'Did you ever hear anything quite so bad,' they are saying, 'as that new symphony by Smithkofsky? It isn't even music!' If by chance one of the purrers gets into the circle of snarlers and growlers, either he flees in desperate search of more congenial company, or else there is a terrific argument. Of course it does not end in agreement. Each one knows his own 'feelings' perfectly well.

Usually such arguments, if the participants stay friendly, are finally dismissed with some such remarks as, 'Well, every man to his own taste.' (Though there is likely to be the silent addition, '... but yours is lousy!') Sometimes it is said more poetically: 'Music is like Cleopatra—she is all things to all men.'

However, there is a possibility that it is not 'just a matter of taste'. Everyone knows that much music that is violently rejected by a majority of listeners on first hearing is ultimately accepted by almost everybody. This could suggest that there may be another reason than 'just taste' for such sharp dissension. Isn't it possible that what the two opponents heard was actually a very different musical structure; that they are like witnesses at the scene of an accident, whose testimony conflicts because there were so many aspects to the situation that each could abstract an entirely different pattern? Because of the tremendous complexity of the music context—all of which is relevant—is it not very likely that the expressions of such divergent feelings were prompted by an abstraction from that whole context quite different in structure for each listener? We must find some way of determining whether we are talking about 'the same thing', some way of 'pointing'. For if we are not talking about 'the same thing', then talking is futile.

There is naturally as much confusion likely among the *verbal* abstractions employed in musical discussion as there always is where verbal abstractions are tossed around. There is likely to be even more than usual because of the strong affective reactions (thalamic) that music arouses. In such a context words are doubly treacherous. For instance, while it is fairly obvious that such words as 'beautiful', 'wonderful', 'marvelous', 'haunting', or 'vital', or 'romantic' have a purely affective reference, it is not nearly so obvious that such apparently technical terms as *dissonance* and *climax* have affective components also. 'The dissonant intervals', according to my music dictionary, 'are the seconds, sevenths, and all augmented and diminished intervals.' But that was dissonance¹⁹⁰⁵. Until a few hundred years ago, thirds were also *dissonant* in-

tervals. On the other hand, any popular dance orchestra of today frequently finishes a performance with a minor seventh, to everyone's obvious satisfaction. Moreover, anyone with a 'modern' composer among his acquaintances, knows that *dissonance* can differ considerably with contemporary individuals. Dissonance Irving Berlin is not dissonance Igor Stravinsky, which is not dissonance John Smith at all. And Mr. and Mrs. Concertgoer who exchange an understanding glance at the *climax* of the Beethoven Fifth symphony could not get together with the Tired Business Man sitting behind them, completely unmoved, waiting for the cymbal-player to get up and do his stuff. He knows a *climax* when he hears one, for he has heard Ravel's 'Bolero', and *there* was a *climax* for you! But then, even Mr. and Mrs. Concertgoer might not hear *climaxes* in Gregorian Chant.

But with problems of verbal abstraction I am not primarily concerned just now, for there is a tremendous field for differences in abstraction before verbalizing begins, differences in sound-structure which for each individual seem 'to be actually there' to be 'pointed at' when someone asks: 'What noise do you mean?'

I should like to have you try on yourself a simple technique for extensionalization to verify these differences.

Let someone else play two tones on the piano, simultaneously. Can you hear the *lower* one, apart from the *higher* one?

Have him play three tones. Can you hear the *middle* one? (If you think this is easy, try singing it, and then check to see if you were right.)

He plays more than three tones. How many can you hear?

Have him beat on the table a fast rhythm, with steady accents. Can you count the number of beats between the strong accents? How fast can it be before you have difficulty? (You can try this on a gasoline motor.)

Tell him to play several times at different pitches the same interval (say an augmented fourth) and when you have the sound well 'in mind', have him throw in without warning you a somewhat larger or smaller interval, (say a perfect fourth or fifth). Can you spot it when it comes?

If you can manage that, have him play several different intervals at different pitches and then, after a slight pause, one more. Is this the 'same' as any of the others? Can you tell which one by the order in which it appeared?

Notice that there have been no terms used except simple structural ones. These are simple problems in distinguishing the relationships of a very simple musical structure, the relationships according to the distribution which we label *rhythm*, and that which we label *high* and *low*. Any musical composition is infinitely more complex in structure than these examples, but it can be found that even people who have been associated with music (and discussed it with confidence) for years are none too sure of making these rudimentary differentiations. (They turn up in numbers at professional music schools—and graduate too.) You are comparatively well extensionalized if you can tell the number of voices in a fugue at first hearing, or distinguish without looking, which instruments of the orchestra are playing. If you cannot, then there is a good possibility that your affective reactions are based on only a small part of the whole musical structure. And discussion of 'the music', like the discussion of the elephant by the four

blind men in the old tale, has no chance of 'making sense' because it started from different abstractions and evaluations.

Without the assurance of the ability to make these simple discriminations, a knowledge of music theory only makes matters worse, for such knowledge is then purely verbal. It does little good either to practise recognizing 'themes', as students in music appreciation classes do, for that only makes it all the more likely that one will hear little else. The student is almost sure, when he comes to hear an unfamiliar symphony, to sit through it wondering desperately, all the time, 'Button, button, who's got the second theme?'

Assuming that we can make some of these basic simple abstractions, how are we to be sure that our evaluations of a larger musical structure take in the full extent of that structure? that something of the composer's created pattern has not been left out of our abstraction? We need desperately a 'map' which will indicate the extent of the musical 'territory' in terms of these elementary relationships: *high-low*, *fast-slow*, etc. It happens that there always is such a map available; but most people are terrified by it, because it has always been thought useless to any except well-trained musicians. It is the musical score. The musical score functions as a map which indicates very clearly to anyone *how many* sounds are to be heard, whether they are *high* or *low*, whether they progress *up* or *down*, which ones are moving *faster*, which *slower*, and *which instruments* are playing them. The only technique necessary is that of being able to interpret the notation of time-values, and to follow the measures with the eye (with a pointing and tapping finger if it helps) along with the strong beats of the music. And this can be learned quickly by anyone with a rudimentary 'sense of rhythm'.

It is not necessary to be able to tell from the score in advance, as some musicians do, just what the sounds will be. We can use the score simply as a means of checking as to whether there is something we are not hearing, and for an indication of whereabouts in the *heard context* to listen for it.

It would be well, of course, to begin with not very complex scores, like Prokofiev's *Peter and the Wolf* or Borodin's *Steppes of Central Asia*, and to be certain of a Mozart symphony before tackling a Beethoven. Also, it is to be expected that this may temporarily interfere somewhat with one's pleasure in the music. But experiments which I have carried on with musically untrained people show that more complete abstraction of the whole musical context is possible by this means and is subsequently accompanied by an increase of pleasure in the musical experience.

It may be next to impossible for anybody to 'register' all the relationships of a musical composition in one hearing, or in many hearings. But the technique of following a score does let us know how much we are *not* hearing, and it makes us able to 'point' in the direction of the extensional musical context when there arises some form of the question, 'What noise do you mean?'

PART III---*Continued*

Some Neuro-Semantic and Neuro-Linguistic Factors
In the Re-Construction of Education

Section C

APPLYING GENERAL SEMANTICS IN PHYSICS COURSES

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The following remarks concern an attempt to apply the principles of general semantics as set forth in Korzybski's *Science and Sanity*¹ in the instruction of physics courses. These courses include general college physics, high school physics, and the supervision of practice teachers of high school physics, all given in a teacher training institution.

Any observant physicist will recognize that the notions of general semantics, its basic 'map-territory' postulates, the 'structural differential' which illuminates the correspondences between symbolic representations and factual experiences, the 'extensional devices', etc., are inherent to some extent in the procedures of the exact sciences, particularly in physics. It is the outstanding achievement of Korzybski to have recognized the fundamental importance of the fact-symbol relations, to have analyzed, clarified, and organized them so as to have achieved, in effect, a new natural science, a new methodology of significant value in every phase of human activity. The awareness of the principles of general semantics and their applications in the problems of physics instruction, I have found, are of great aid to the instructor, making the teaching of physics simpler, easier, and more effective. The first published material concerning the application of general semantics in the teaching of physics is, I believe, that of Weinberg.² I shall try to illustrate my own attempt with some specific examples.

At the beginning of the course of instruction a discussion is started concerning the non-identity of experiment and theory. For this purpose an actual experiment is performed. For example, an object is allowed to fall. On the board is written the equation ' $h = \frac{1}{2} gt^2$,' which states the relation between the time and the height of the fall. Below the equation is sketched a picture to represent the falling object. A box is drawn around the equation and another box around the sketch with a few lines to connect the two boxes. The figures on the board form, in effect, a simplified 'structural differential' diagram. The equation is *not* the experiment. The distinction between the experiment and the theoretical formula, between the fact of the fall and its symbolic representation, is explained, emphasized, and reiterated many times. The students are asked: 'What does physics "mean" to you, experiments or theories? What would you rather do, perform experiments or solve problems, take measurements on apparatus or study principles? Which do you think is more difficult, laboratory work or the learning of formulas? What would interest you more, to observe meters, or to plot graphs?' The sole purpose of these questions is to develop the student's awareness of the im-

¹Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

²Alvin M. Weinberg, 'General Semantics and the Teaching of Physics,' *The American Physics Teacher*, VII (April, 1939), 104-108.

portant differences between the level of 'sense experience' and the higher order levels of verbal abstractions.

The fact that most students prefer experiments to formulas, manual activity to theoretical analysis, may reasonably be taken as an illustration of the natural order of evaluation by the students. They realize strongly that they learn most easily through direct 'sense experiences'. Physics, of course they are told, consists of the study of both experiments and theories, and of the correlations between them. As far as possible, however, in their course of instruction, experiments will come first and theories second; demonstrations will be given at the beginning and the formulas applied later.

It should be said in passing that it is pedagogically wiser not to use the terms, *general semantics*, *non-identity*, *structural differential*, etc., at first. They are usually new words to the students, and until the terms are thoroughly understood extensionally the students may react negatively towards them.

The discussion of the non-identity of experiment and theory invariably brings to light the fear and the dislike of many students towards 'the higher order abstractions' of physical theories. This is precisely the occasion the instructor can use to dispel what is often an unwarranted psycho-logical barrier or semantic blockage. He should explain to the students that they are already using abstractions of relatively high order. The use of words, the very ABC's, adding, subtracting, etc., are already symbolic processes, simple theories which they all accept and apply without hesitation. If the student can be made aware of the symbolic, abstractional nature of his everyday linguistic tools, he will be less fearful and more co-operative in trying to grasp higher orders of abstractions in physical theories.

For example, the average student is quite familiar with the 'meaning' of speed, as the distance traversed in a given unit of time. Some indication of the level of this abstraction should be pointed out. Then the term *acceleration* is presented. In general this will have only a vague 'meaning' (or extensional value) for the student in terms of the 'pickup' of an automobile, but the formulation of acceleration as the rate of change of speed is only one rung higher on the 'abstraction ladder'. Once he has become conscious of abstracting, the student will be less hesitant towards making the step upwards.

In this way he becomes aware of the indefinite extensibility of the levels of abstraction. He should be told that the limit of his understanding will be raised but not exceeded. He will have to stretch but not higher than he can reach. It is the duty of physics teachers particularly to combat the tradition that theirs is the most 'difficult' subject of the curriculum. In our scientific age we cannot afford to be without physics courses for all high school students and all college students. These courses should be suited to their needs and capabilities and so appeal to their interests.

Throughout the course of instruction the student must learn, also, that no map represents *all* the territory. For example, the formula ' $h = \frac{1}{2} gt^2$ ' is valid only if we can neglect air resistance. Newton's laws are only approximations. They are valid in most practical affairs, but in astronomical observations when greater accuracy is demanded, Newton's laws must be replaced by Einstein's theory. But Einstein's theory again is only a better approximation, etc.

Again in terms of a simplified 'structural differential' diagram the connecting links between facts and symbols, between experiments and formulas, are explicitly emphasized whenever an occasion presents itself. Answers that are vague or partial are pinned down to specific, factual experiences. What happens to an object under the conditions specified? What is the 'meaning' of this symbol or that formula in terms of an experiment? To illustrate, a common problem in mechanics is to find the force with which an object that has fallen, say four feet, strikes the floor. The solution may be investigated in terms of the equation ' $F = ma$ '. It is helpful to draw a sketch representing the object at the top and at the bottom of its fall to represent the experiment. Above this sketch is written the equation ' $F = ma$ '. As the object falls it has an acceleration, a_1 . This is *not* the acceleration that enters the equation. Rather it is the acceleration, a_2 , as the object is stopped at the floor that must be used. There are also two forces involved in the experiment, force₁ on the object while it is falling and force₂ on it while it is being stopped. By using indexes and calling attention to the need for establishing the proper correspondences between the symbols and the facts the student receives invaluable training in developing a healthy semantic attitude, and habits of proper evaluation.

The analysis of commercial advertisements of many of the devices and gadgets that owe their existence to physics also provides opportunities for this kind of training. A radio is claimed to give 'remarkable' reception. A fluorescent lamp is said to have a 'high' power factor. What is the extensional value of 'remarkable' in this context? What does 'high' power factor signify in terms of quantitative measurements of performance? A car is advertised as having ninety horse power. The state license for the same car lists twenty-four horse power. What is the 'meaning' of such statements? How can we determine the facts concerning the power of a car engine? Such analyses are rich in physics material and opportunities for training in general semantics.

The analysis of puns is also useful in demonstrating fact-word relations. Consider the advice of the conscientious physiology instructor: 'Drink water, lots of it. It will keep you from getting "stiff" in the "joints".' A student replied by asking: 'What if they don't serve water?' The mechanism of one word-symbol representing two quite different factual situations provides the humor of many jokes. It is also the mechanism that produces confusion in physics and in countless situations of everyday life. It is possible in this manner to encourage students to make a game of indexing and to discover the 'multi-meaning' and often multiordinality of many symbols. A teacher who has accepted the discipline of general semantics finds it a pleasurable experience to be challenged himself by a student who claims that situation₁ is not situation₂ in a given classroom problem.

Physics instructors use 'extensional devices' whether they are aware of them as semantic tools or not. General semantics will help them use these devices consciously and therefore more effectively. Physics symbols are probably more universal than those of any other science. For this reason greater care in their use must be exercised with beginning students. In mechanics, for example, a 'pound' of force 'is not' a 'pound' of mass. The confusion inherent in the several 'meanings' of the symbol *pound* has long been the bane of physics students. Falling bodies present problems involving at least

three important, different abstractions all labelled *velocity*: $velocity_1$, the average velocity; $velocity_2$, the initial velocity; and $velocity_3$, the final velocity. The student needs time to learn that $velocity_1$ is *not* $velocity_2$, etc., and how to correlate the proper equation symbol with the data of a given problem. When he has acquired the habit of automatically indexing and dating his symbols, he is much less likely to become confused.

In the supervision of practice teaching it is immediately apparent that the most important lesson the student teacher must learn is that of the natural order of evaluation—that 'sense experiences' are more fundamental, that descriptions, inferences, hypotheses should come after the demonstrations of experiments. The student teacher is apt to forget how many 'characteristics' have been omitted in the statement of a higher order abstraction. He tends to think of teaching as only the re-expounding of the principles found in textbooks. The wise, experienced teacher begins with the background of the students in terms of objects they have handled. He does not 'tell' his students; he has them 'tell' him so that they develop higher order abstractions out of their own experiences and the new experiments performed by them. Any teacher who can be made aware of the natural order of evaluation, of the processes of abstracting so effectively and concisely represented by the 'structural differential' will acquire a basic understanding of the educational problems confronting him.

To summarize, general semantics can be usefully applied in minimizing the initial difficulties of physics students and make the work of instruction throughout the course easier and simpler. Many of the notions of general semantics are inherent in the methodology of the physical sciences. To be aware of these principles as principles explicitly encourages the instructor to use them more adequately. If the physics student acquires firmly grounded 'extensional' habits while he is studying the numerous applications of physics around him, the habits will persist when the verbalizations will have been forgotten, and one of the important functions of the physics course will have been achieved.

A SEMANTICS COURSE FOR ENGLISH MAJORS: AIMS, CONTENT, AND SOME EVALUATIONS¹

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AIMS OF THE COURSE

The general aim, as I see it, of the semantics course for English majors is to make speech, language, and literature in their various social functions the instrument of freedom, personal and social, rather than the tool of oppression. This course aims to promote moral autonomy and co-operative living and to attack the seeds of totalitarianism, crime, and misunderstanding at their source in human maladjustment rather than in their symptoms as they exist, for instance, on the continent of Europe today.

The professional aims of the semantics course for prospective teachers of high school English are two. The first is to see that the prospective teacher is himself, as a human organism and a social individual, *extensionally* oriented, that is, able to distinguish life facts from their verbal symbols. The second is to teach him the applications of extensional methods to various language skills.

'Every subject taught,' Wilford M. Aikin, director of the Thirty Schools Experiment of the Progressive Education Association, recently declared, 'finds its ultimate value in its contribution to an ideal and manner of living.'² Since the teacher is always a part—often the predominant part—of the total learning experience, it is of the utmost importance that the teacher, irrespective of his subject, be a self-possessed, integrated human being. Without this primary qualification he can accomplish little towards a desirable 'ideal and manner of living'.

The training in extensional orientation just discussed might well be termed the positive element of the semantics course, while the application of general semantics methods to the various language skills is to a great extent a negative matter. It consists in breaking down some of the proudest structures of sincere and 'refined', but intensionally oriented teachers who inculcate the 'eternal verities' of 'inspired geniuses' with slight regard for context, date, or place, and who consider word 'meanings' as circumscribed by their dictionary definitions. 'Meanings' in terms of organismic reactions to verbal stimuli tend to be either unrecognized or dismissed as too 'indelicate' to mention.

FIRST APPROACH

A. Content: My first approach to a course in semantics for English majors was by way of a rather extensive introduction to a selected core of the theory and terminology

¹ The courses reviewed in this paper were given at the New Jersey State Teachers College at Montclair in the period from 1939 to the present summer session in 1942. In the former year a course in semantics entitled *Language Arts* was introduced as a requirement for all freshman English majors, and as an elective for all upper classmen. In the four sections of this course, which I have taught, I have had ninety-nine students in all. The majority were freshmen and sophomores and 80 to 90 percent of the total number were girls.

² 'What's Wrong with our Schools?' *New York Times Magazine*, Sept. 7, 1941.

of general semantics as developed by Alfred Korzybski.³ This was followed by an attempt to teach some applications of general semantics methods to language skills. A routine procedure in the first portion of this course was the explanation and illustration of a principle and its core terminology followed by suggestions for collecting concrete instances of their application. This exercise was a frequent homework assignment.

In the latter part of the course prose and verse selections were evaluated in class in terms, on the one hand, of the types of symbols employed; and on the other, of the types of experiences evoked. Distinguishing symbols projected upon experience from the author's literary background from those derived from life facts to which the author had reacted as a total organism, was felt to be a valuable exercise even though such distinctions cannot as a rule be verified. The reading of Swinburne provides a good hunting ground for literary symbols, while Whitman is excellent for sense-impression symbols. Another exercise was the demonstration either orally or in writing of the vast differences in word 'connotations' and in the interpretations of figurative language which exist even within a rather homogeneous group.⁴

Experiences derivable from creative literature were evaluated with respect to their possible contribution to the extensional orientation of high school students. The problem of the respective values of the literature of phantasy, whose world is intensionally oriented, and the literature of realism, whose world is extensionally oriented, was considered. It was suggested that neither of these types is necessarily detrimental to proper orientation nor necessarily helpful. The 'purest' realism must be abstracted from the unending variety of nature, and so must give a dated and localized world picture wrought upon an illusion of extensional orientation. And phantasy, when recognized as such, may stimulate new perceptions of differences in such a way as to assist notably in achieving sane 'mental' habits.

The core of theory and terminology used in my first classes was in part as follows:

1. Experience: (a) verbal and non-verbal; (b) signal and symbol reactions; (c) reactions of the organism-as-a-whole-in-an-environment.
2. Process of abstraction: (a) multiordinality of terms; (b) terms, structure and 'object'; (c) devices for avoiding the fallacies of *all-ness*: namely, dates, indexes (subscripts), and the sign *etc.*
3. 'Meaning': (a) dictionary 'meanings'; (b) contextual theory of meaning; (c) structural assumptions implied in words; (d) 'denotation' and 'connotation'.
4. Four types of language uses: (a) scientific 'meanings', i.e. verifiable by experiment; (b) informational 'meanings'—statements based on inferences from documents, witnesses, etc., whose verifiability can only be in terms of more documents, etc., as in the

³ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition: Lancaster, Penn., The Science Press Printing Co., 1941).

⁴ A sophomore boy expressed this feeling which is shared by many students: 'I believe that even more emphasis should be placed on how words affect different people (as we did several times in class) since I believe that true realization of the different ideas brought about by words can be emphasized only by listening to others.' I am of course especially indebted here to I. A. Richards' *Interpretations In Teaching* (New York: Harcourt, Brace and Co., 1938).

usual generalizations of the social sciences; (c) persuasive 'meanings', as in 'pep talks', advertisements, and propaganda, i.e. statements in which word 'connotations' obscure 'referential' senses and often the writer's intention; (d) creative 'meanings', as in verse and prose, (1) words as sense-impression symbols, (2) as 'literary' symbols—'connotations' interoceptive rather than exteroceptive, (3) emergent symbols⁵—e.g. the sense of life as a pilgrimage that arises from Dante, Bunyan, and Homer, (4) 'thought' symbols.*

B. Evaluations: By the end of the semester course the majority of students had developed a fair ability with the tools of extensional method. They were at a stage roughly corresponding to that of a student who has just completed his Latin grammar, but has no reading vocabulary. These students had learned as it were, to conjugate and decline in the 'grammar' of general semantics, but were unfit still to 'read' the complexities of life situations or to apply their knowledge readily to language skills.

A major defect of this approach seems to me to lie in its essentially intensional, verbal nature. Here were more verbal gymnastics while the life of the organism-as-a-whole tended to remain untouched. Such cortically acquired skills are rather easily forgotten. An instance of this was the case of a boy who had become outstandingly proficient, but was prevented from taking the final examination until about three weeks after the course ended. By that time he had almost completely forgotten his extensional skills, and his old semantic reactions had returned.⁶

* *Editor's Note:* In the above and elsewhere, I have with the author's approval and for reasons suggested below enclosed certain words in quotation marks, one of the extensional devices of the non-aristotelian method. This 'safety device' (as Korzybski calls it) serves as a warning—beware theoretical dangers ahead if you follow the structural implications of this terminology. Such terms as 'meaning', 'denotation' and 'connotation', and 'referential' (referent, reference, etc.) are perhaps unavoidable in classroom application and discussions of Mr. Richards' unquestionably valuable contributions to verbal teaching techniques; they may even be harmless if one has Mr. Pettegrove's grounding in the principles of the non-aristotelian system. However, these and other such terms current in the teaching of language and literature do introduce insurmountable blockages when they are taken seriously, i.e. if their structural implications are not explicitly avoided in one's orientations and understanding of the theory and use of non-aristotelian methodology in teaching, writing, etc. Unhappily, examples of failure to so distinguish and avoid terms implying aristotelian premises, orientations, etc., are already too plentiful in printed writings on general semantics and have led to needless misunderstandings and non-productive criticism. This note is aimed simply at staying further perpetuation of error. On the subject of 'dangerous' terminology see for example A. W. Read's 'The Lexicographer,' especially footnote 14 on 'connotation and denotation'; T. C. Pollock's 'Critique of I. A. Richards' Theory of Language'; J. G. Spaulding's 'Elementalism' and others in this volume. On the impossibility of a workable theory of 'meaning', see Korzybski's Foreword to General Semantics Monographs, No. III, and for a striking example of what the structure of a form of representation involves and how intimately forms of representation are inwardly and structurally interconnected with systems see his account of the consequences of an attempt to introduce newtonian 'mass' into einsteinian 'space-time', page 384, *Science and Sanity*, *op. cit.* This last serves well as an illustration of what happens, in principle, to infinite-valued orientations, etc., when one attempts theoretical compromises with terms of two-valued, etc., structural implications.

⁵ For a clarified understanding of this type of symbols I am indebted to Thomas C. Pollock's *The Nature of Literature: Its Relation to Science, Language, and Human Experience* (Princeton, New Jersey: Princeton University Press, 1942). I refer the reader to Professor Pollock's excellent analysis of literary symbols.

⁶ Perhaps it should be indicated here that this boy is the son of a rabbi. This articulate home environment may have acted as a specially strong semantic counter-agent during the boy's illness when he was at home for about two weeks.

Yet even this approach was not without some worthwhile results. Several students from my first two classes came to me about a year afterwards at odd intervals with semantic problems they had noted in persons and textbooks. One boy, a star member of the debating team, brought me his special problem of using sweeping generalizations for rhetorical effects. The training in the *non-allness* principle had made him aware of the fallaciousness of such statements.

Some weeks ago I met on campus a girl, now a senior, who from a bewildered beginning had developed into the ablest student in my freshman group. She began to talk semantics, but as I was rushed to meet a class I asked her to write out for me how semantics had influenced her. In a few days I received a four-page essay entitled 'Semantics: An Improved Language' with a note attached stating: 'It is what has stuck with me for over two years and would take a long time to eradicate from my "psycho-physiology".'

I was particularly interested in the types of material which had 'stuck'. They appear to be these five:

1. The role of speech 'in order to facilitate our adjustment to our environment'. 'To convey meaning we must convey pictures of these relationships [to environment].'
2. The vagueness of ordinary speech, which is compared to the grunts of 'our primitive ancestors' because of our habitual failure to realize inside-the-skin differences in the meanings of such words as *home*, *beautiful*, etc.
3. The effects of our psycho-physiological states on meanings of words and sentences.
4. The necessity of fitting words to life facts: 'You would not consider using the symbol "2" when representing three objects. Words are symbols of situations, you must put them together so that they . . . represent the correct situation.'
5. Advice for effective communication: 'To speak effectively, one must realize the relationships which words have to situations, the connotations which words form, etc. Realizing this, we seldom let a word go off to convey a meaning without a procession of examples, which will create a relativity [*sic*] of time, place, and occurrence.'

It is significant, in view of further evidence of the same sort, that the influence of general semantics 'which has stuck with me for over two years' is entirely related to the first of the professional aims mentioned at the beginning of this paper, that is, to the student's personal orientation. The semantic analyses of creative writing and literary criticism which were emphasized in class have either been forgotten or seem not to merit a place in such a brief summary.

SECOND APPROACH

A. Contents: In re-shaping my materials for the following year I took the fact just noted into special account. I had evidently succeeded least in teaching the applications of semantic method to the appreciation and interpretation of creative literature. I therefore greatly simplified my theoretical core, and concentrated more on the practical uses of general semantics not only in literary criticism, but in other common language functions. In this I was aided by the timely appearance of the first mimeographed edition of S. I. Hayakawa's *Language In Action*.⁷

⁷ See the latest edition (New York: Harcourt, Brace, and Co., 1941), which has grown experimentally out of the briefer initial form.

The wording of general statements came in this time for special treatment. The most teachable procedure here was the routine application of Korzybski's devices for evaluating generalizations.⁸ Statistical generalizations such as are frequent in the social sciences and, say, in educational psychology were contrasted with all-ness statements which retain their reference to enumerated individuals. For example, when the text-book says, 'The adolescent boy exhibits awkward postures,' if this statement is based upon observed statistical correlation, it is not refuted by a single exception, as are aristotelian generalizations. Scientific generalizations were evaluated as verifiable predictions about the external world. Indeed, all the general statements we considered were investigated with respect to their verifiability. The 'eternal verities' thus became unverifiable assertions.

In a six weeks project at the end of the semester I attempted to teach the use of general semantics methods in the study of the English literary classics. We assayed what might be called *extensional appreciation* and *extensional criticism*. Under the first head it was urged that great literary artists are not employing language referentially, they are not writing about the external world. On the contrary, they are expressing (pressing out) from within, through the medium of linguistic symbols, the experience which they communicate.⁹ The 'gems of truth', which English teachers are traditionally so fond of flashing on their uncritical audiences, are thus seen to have issued from the writer's intercortical pathways, and not from the external world of verifiable predictions. Hence the 'truth', say, of the advice of Polonius has two sharply distinguishable senses. In its artistic context, its 'truth' signifies the appropriateness of the words to intended dramatic effects such as the character of Polonius. Outside of this context, Polonius's advice becomes a set of undated propositions about the external world which require validation at the date and place asserted if they are to be considered 'true'. When, for instance, Polonius says: 'Costly thy habit as thy purse can buy,' we can readily concede the artistic 'truth' of the advice. But outside its context such a view would at present be looked upon as contrary to our national program of reducing retail consumption.

The standard assignment during these six weeks was a written report on a classic of a different genre for each Monday morning. Comparison of these reports with individual reactions to the writings on which they were based and with 'accepted' criticism constituted class discussion and investigation throughout the week. Our special objective was to make our interpretation and evaluation reflect our immediate experience of the literary work, and so to disentangle our appreciation and criticism from the force of habitual verbalisms and from the almost irresistible power of 'great names'.

B. Evaluations: Foolproof as this study plan had seemed in the blueprint stage, I was disappointed in actual results. Rerouting the 'mental' traffic of a decade of intensional orientation was more difficult than anticipated. A frequent student reaction was: If the correct interpretation of this classic cannot be found in the writings of the 'great' critics, then what right have I to expect to find it? This static, cortical attitude towards the dynamic organismic experience of art appreciation is not easily refuted

⁸ See above, page 474, 2. (c) devices for avoiding fallacies of all-ness.

⁹ I refer the reader again to T. C. Pollock's *The Nature of Literature*, *op. cit.*, for a most lucid discussion of this point.

on the non-verbal [experiential] level. For the average student is evidently prevented by his 'education' from any living (thalamic) appreciation of the English classics. And there is little to wonder at in this when one considers the traditional high-school teaching devices of pointing 'morals', of breathlessly admiring cut-and-dried 'purple patches', of committing the 'eternal truths' to memory, etc. These are the ways of permanent confusion and maladjustment rather than of 'sweetness and light'.

THIRD APPROACH

A. Content: As I have completed only the first part of my current semantics course I shall speak only of that part, which aimed at extensional orientation of students as social individuals. Revision of materials for this approach consisted in a serious attempt to avoid training in verbal manipulation alone; it involved adaptation of subject matter to predictable student receptivity. As a result my theoretical core became more fluid; I cared less whether students understood the theoretical points than whether they were in fact becoming extensionally oriented on the non-verbal neuro-muscular level. Lesson plans were therefore constantly altered in order to keep them in line with vital student interests.

Greater stress was laid on the psycho-physiological aspects of 'meaning', i.e. on the non-dictionary senses of words. Assignments sent students to the library to read up on glands, hormones, nerve fibres and impulses, and the anatomy of the human brain. I myself drew heavily at this point on Joshua Rosett's *The Mechanism of Thought, Imagery, and Hallucination*.¹⁰

As a follow-up of our study of inside-the-skin 'meanings' an interesting week was spent on analyses of our own dreams as the available evidence for normal persons of 'total meaning', that is, the effect of stimuli on the organism beyond the aspects of which we are conscious. Students read Freud's *Interpretation of Dreams* and his *Introductory Lectures*, and other relevant texts with satisfaction at this stage of the course.

The discussion of Freud—in that 'purest' of contexts, the English class—inevitably brought up the subject of semantic blockages. Matter for discussion under this head lay before us at the mention of words referring to sex characteristics or to 'tabooed' parts of the human body. It was thus an easy exercise to note 'identifications' of words with things as these were evidenced by blushing, tenseness of throat muscles, confusion, etc. It was pointed out that similar reactions cause the semantic disturbances noted in persons whose political affiliations are affronted, or whose favorite rationalizations are disputed. The necessity for dissociating words from our reactions to life's situations on the silent level could be strongly recommended under these conditions. During these discussions students also browsed in Westermarck, Frazer, and Margaret Mead.¹¹

Next, the semantic blockages of fixed beliefs and settled convictions were in-

¹⁰ Joshua Rosett, *The Mechanism of Thought, Imagery and Hallucination* (New York: Columbia University Press, 1939). I highly recommend this book to all students of semantics.

¹¹ E. A. Westermarck, *The History of Human Marriage* (Fifth edition; New York: Allerton Book Co., 1922); J. G. Frazer, *The Golden Bough: A Study in Magic and Religion* (Second edition; London and New York: The Macmillan Co., 1900); Margaret Mead, *Coming of Age in Samoa; A Psychological Study of Primitive Youth for Western Civilization* (London: J. Cape, 1929).

vestigated. Study of the process of abstracting got natural motivation from the interest which had grown up around this general subject. Convictions were attacked from two angles: that of objective reference, from which they were treated as general statements subject to verification in terms of the relevant data; and the angle of 'emotional' or psycho-physiological reference, from which they were considered as mostly thalamic evaluations, that is, signal reactions. In the case of so-called settled convictions, the non-allness principle was clearly applicable, and the remedy was obviously Korzybski's devices of dates, indexes (subscripts), and the *etc.*

Research habits—the desire for, and the methods of, finding out when one does not know—received far greater attention in my present course than ever previously. Extensional orientation will never, I believe, be achieved by any student, however 'brilliant', who does not habitually combat intensionalism with increasing knowledge of and acquaintance with the world he lives in.

B. Some Student Evaluations: In the fifth week of my current course I asked each student to put down in about a page—or in any length or brevity he desired—his reactions so far to the course content. I made it clear that negative data for my purposes were just as valuable as positive. In each case where I quote below from these commentaries I have had half-hour conferences as checks on the written remarks.

Of about a dozen points in which the class expressed special interest, the five most popular in order of preference are as follows: (1) understanding of semantic blockages; (2) method of indexing differences; (3) realizing the difficulty and necessity of making accurate statements; (4) consciousness of the non-allness principle; (5) understanding of personal prejudices.

The majority of the class—more than twice as many as mentioned any other point—highly approved of breaking down semantic blockages due to 'shock words', as we had termed words which evoke strong semantic disturbances. A freshman girl wrote: 'I believe that much unhappiness and failure in life may be due to this "semantic blockage". For even in this short period of orientation, I feel more content and more satisfied with life in general.' This sounded so much like a testimonial for a patent medicine that I made a special effort in our conference to get behind these statements. Here I found a quiet, shy girl, underdeveloped physically and socially. She told me she did not like to play any games, dance, or read novels; she did not like to do anything but study for high marks. She had had an all-A record in high school. Inner semantic tensions resulting from this unusual specialization have evidently been released somewhat by extensional re-orientation.

On the indexing of differences in experiences a number of revealing statements came in. One cannot but agree with this sophomore girl who says: 'The plan for indexing words and situations is another excellent one [suggestion], although it is something which I feel we should have learned long ago.' A freshman girl reports that by the use of Korzybski's devices of dates, indexes, and the *etc.*, she has alleviated a mild phobia of cringing, in a way which caused her friends to tease her about it, whenever hands were outstretched towards her neck. Upon learning that most phobias are due to 'identifications', she relates that she connected her own fears of hands near her neck with an incident in childhood when a small boy had choked her violently, as a winning move in a dispute. She comments:

I had failed to index and date the incident [in childhood] with its proper evaluations. . . . I now say to myself that this is not the same time and place, and that the circumstances are different. I find that my former fear has gone away to a great degree.¹²

Recognition of personal prejudices and the application to them of extensional methods have intrigued several members of the class. One girl declares bluntly:

I know how people get prejudices, which is identification using the transfer method. I discovered that this is the way people get prejudices and phobias.

MY INDEBTEDNESS

In conclusion I wish to express my indebtedness to a few persons and books that have most directly affected the work discussed in this paper.

As is obvious to the reader of the foregoing I owe most to Alfred Korzybski. I am indebted to his unforgettable seminar which I attended at the Institute of General Semantics in June 1939, and to *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics*.

S. I. Hayakawa's *Language In Action* has been very helpful, and much liked by students. Students in my present class are reading both Hayakawa and Irving Lee's *Language Habits in Human Affairs*.¹³

I learned a lot from the manuscript of Thomas C. Pollock's volume, *The Nature of Literature*, as has been mentioned in the notes above.

My colleague, Lawrence H. Conrad, who has been notably successful in developing the methods of I. A. Richards, has shared with me many valuable teaching devices and fruitful 'ideas'.

¹² I hasten to add that I have rather conspicuously avoided emphasizing the therapeutic values of Korzybski's methods as interpreted by me in order not to appear as an amateur dabbler in psychiatry.

¹³ Irving J. Lee, *Language Habits in Human Affairs: An Introduction to General Semantics* (New York: Harper and Brothers, 1941).

GENERAL SEMANTICS AND THE STUDY OF LITERATURE: A PRELIMINARY REPORT ON WORK WITH COLLEGE FRESHMEN

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The investigation of which this paper is a preliminary report grew out of a desire of the writer to observe for himself the results of introductory training in general semantics on the study of literature by freshmen in a liberal arts college.¹ The investigation, it should be emphasized, was essentially informal. While some attempt was made to measure results 'objectively', the lack of suitable instruments for appraising the abilities and attitudes under observation made it necessary to rely largely on more 'subjective' methods. By way of further introduction, I may add that while I hope the account of the project may be of interest to advanced students of semantics, I am addressing myself primarily to college teachers of literature who possess a continuing interest in problems of teaching technique.

The students involved in this project were those registered in two sections of the regular Freshman English course in Connecticut College. The syllabus for the course called for reading in the works of Pope, Keats, and Arnold. The reactions of students trained in general semantics to these three, as compared to the reactions of a group without this training provided the material on which the investigation was based.

The introductory training was grounded on study of Hayakawa's *Language in Action*, the second experimental edition.² Three class meetings a week for six weeks were given to detailed discussion, elaboration, and particularly illustration of Hayakawa's material. From published sources and from their own previous writings, students collected excerpts appropriate to illustrate the principles under consideration. At the same time numerous written assignments required application of these principles, and these written assignments were discussed in individual conferences with the instructor.

At the conclusion of this training, the regular work of the course was resumed—reading in the works of the authors named. It was in the student discussions and critical essays dealing with these literary works that the results of training in general semantics were observed. It should be noted that students were *not* required to make formal detailed semantic analyses of the literature studied, though some of them in their enthusiasm attempted to do so. In general, class discussions and directions for written assignments followed the same pattern as that used in the section which had had no semantics training. As was to be expected, the semantics-trained students fre-

¹General semantics as formulated by Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

²S. I. Hayakawa. *Language in Action* (Second experimental ed.; Chicago: Institute of General Semantics, 1940).

quently raised issues and made observations which reflected their study of general semantics, but these were never deliberately elicited. I was not interested at this time in developing a semantics technique for literary criticism. My purpose was to see whether their brief training could be associated with significant general modifications in critical approach to and understanding of literature. I did not entertain the hope that the training possible under the circumstances would be sufficient to break down and entirely replace language habits and evaluations previously acquired by the students, but I did believe that even brief and imperfect training could be indicative of possibilities.

II

My discussion of results is arbitrarily divided into two parts: first, a number of general conclusions to which the investigation has led; second, brief descriptions of pieces of student work which illustrate and support the general conclusions. While many of my observations are necessarily 'subjective', it should be borne in mind that they were made in comparison with a control group, and on the basis of several years' experience in the teaching of the literary works involved to freshmen who had had no training in general semantics.

Some aspects of the general re-orientation of the semantics-trained students toward language bear indirectly on their study of literature, and these may conveniently be grouped here under the general heading, *linguistic awareness*. By this term I intend to designate the students' increased consciousness of linguistic problems and the processes of communication. During the training they began to lose the tendency to take language—their own, that is—for granted; they no longer regarded speaking and writing as 'natural' or automatic processes like breathing and eating. They became more impressed with the importance of understanding and controlling the operations involved in the process of communication, and they became ultimately more keenly aware of these operations when they encountered them in literature. Up to the present, the *sine qua non* of this attitude has commonly been thought to be extensive study of foreign languages or the study of the historical development of one language, or both. I do not suggest that introductory general semantics training is the equivalent of these, but I am convinced that some degree of 'linguistic awareness' is one of the valuable by-products of even the briefest training.

The semantics-trained students became more careful and more alert readers. Their ability to perceive distinctions and fine shades of 'meaning' increased notably, as did their sense and appreciation of literary values. Evidence of this development was secured by asking both groups to answer questions on assigned reading which had not been discussed in class sessions. Answers to the questions, designed to test comprehension, indicated that the semantics-trained group tended to read less casually and superficially than did the control group. The trained students, in their zeal to apply newly acquired and perhaps imperfectly mastered methods, occasionally bogged down in their interpretations, but more often than not, these same students were sensitive to 'meanings' and implications overlooked by members of the control group.

It soon became evident that the trained students were beginning to develop a more critical approach to the study of literature. The 'unhealthy awe' which many of

them felt toward literature as something alien to them tended to give way to increased confidence in their ability to understand and criticize it as a form of communication. Their written criticisms revealed a sharp decline in the tendency to indulge in inspirational 'appreciation' with vague and valueless generalizations and an increase in specific analyses in terms of communicative achievement. Their critical approach acquired, in embryo at least, some of the characteristics ordinarily looked for only in the work of senior English majors or graduate students. Naturally, training in general semantics alone cannot give freshmen the wide reading, factual background, and the carefully trained judgment necessary for sound, advanced, literary criticism. My point concerns the nature of the student's *approach* to a literary work and the kinds of issues and questions with which he is concerned in his study of the work. Illustrations will perhaps clarify the point.

Both groups of students were asked to write on Keats' 'Ode on a Grecian Urn'. Their comments on the concluding lines of the poem were of particular interest to me. 'When Keats wrote "Beauty is Truth, Truth Beauty," he set down one of those profound convictions which all sensitive souls recognize as an eternal verity,' wrote one of the control students. "'Beauty is Truth, Truth Beauty"—what a profoundly meaningful utterance Keats has here compressed into five words!' wrote another, who felt no need to offer any interpretation of the 'profoundly meaningful' words. These are fair samples of the writing of the control group. I feel certain that most English teachers will recognize in them the vaguely and sweepingly appreciative generalizations characteristic of the timorous and unquestioning freshman critic, whose chief writing worry is that he may not get enough enthusiasm into his praise of the established literary great.

This attitude was much less frequently encountered in the comments on the same passage made by semantics-trained students, apparently for two reasons. In the first place, they were concerned with the poem as communication, with showing that they had understood or tried to understand what Keats felt and not merely that they admired him. And in the second place, they had become self-conscious about the kinds of statements they themselves made; they had become wary of using high order abstractions in ways which they had come to recognize as 'meaningless'. Of course, they did not all arrive at uniformly clear and satisfying interpretations of Keats' lines. My point is that they were not content to accept the lines glibly; they were not hypnotized by the sententious ring of the words. In their attempts to get at Keats' 'meaning', they came to a variety of contradictory conclusions, it is true. Two quickly dismissed 'Beauty' and 'Truth' as 'high order abstractions without extensional meaning'. Several expressed bewilderment or dissatisfaction with Keats after more extended analysis. But most of them were able to reach consistent and acceptable interpretations of the lines, discussing them as an expression of Keats' intensional orientations.

My second group of examples is taken from student comments on Pope's *Essay on Man* and *Essay on Criticism*, particularly the comments which bear on the poet's treatment of 'Nature'. This subject has, of course, been dealt with by English scholars in detail; the many different contexts in which Pope uses the word *Nature* have been collected and classified and the variety of 'meanings' listed. Even without recourse to these articles, the advanced student of literature would, on reading the poem, perhaps

notice that the word has more than one 'meaning' for Pope, and in a graduate seminar his instructor would quite possibly make discussion of Pope's use of the term the subject of an hour's lecture or discussion. But freshmen, generally speaking, are not likely to be aware of such problems, or, if they are, they lack the confidence to admit doubt or to question values where noble sentiments of 'the great masters' are concerned. So the comments on Pope made by students in my control group were characteristically unquestioning and adulatory: Pope's 'wisdom' was 'profound' and his epigrams were 'marvellously concise expressions of universal truths'—of what 'had oft been thought, but ne'er so well expressed,' as few failed to put it. But these comments were most revealing when they touched on Pope and 'Nature'. 'Pope was a nature-lover in the best sense of the word,' wrote one. 'Again and again he reminds us that Nature is the source of all goodness and truth; again and again he urges man to seek in Nature the inspiration for good living and the pattern for the good life.' The almost uniform tendency of the group was to assume that Pope had a single definite 'meaning', that the 'meaning' was the same for all readers, and that it was so clear that to offer an interpretation of it would be to elaborate the obvious, while to express doubt as to its 'truth' would be to reveal oneself as incapable of understanding and appreciating 'great literature.'

The comments on Pope of the students trained in general semantics were gratifyingly free from thundering generalizations; they again revealed more carefully reflective reading; they were concerned largely with specific points or issues in which the writers had become interested. Most significant of all, some half dozen students, struck by the range of 'meanings' which Pope gives to the word *Nature*, wrote short studies on this point which were evidence, to me at least, of the kind of critical maturity which instructors on the graduate level *hope* to develop in their students. I quote from one such paper:

'Nature' is perhaps the most interesting of the group of abstract words of which the variety of meanings must be understood if the reader is to penetrate Pope's mind and understand the 'intensional orientation' which his use of words reflects. Pope sees beauty in the naïve mind of the untutored Indian because 'simple Nature to his hope has given, behind the cloud-topt hill an humbler heaven.' 'Simple Nature' here seems suggestive of the spiritual—an elemental divine spirit permeating uncritical minds of men. But we have not found a definition of 'Nature' because it is used again—this time with definite reference to the world of out-of-doors: 'But errs not Nature from the gracious end, from burning suns when livid deaths descend?' And then another and still different use: 'And Nature is but Art unknown to thee.' Elsewhere, 'Nature' seems to refer to human behavior: 'Teach us to mourn our Nature,' and in the same connection 'Nature' is spoken of as that which 'gives us the virtue nearest to our vice allied.' 'Poetic inspiration' is too awkward a phrase to insert into the heroic couplet, but when it is included among the numerous synonyms of elastic 'Nature' the versification can proceed smoothly: 'The rules of old discovered not devised, are Nature still but Nature methodized.' In the face of these widely varying uses of a single term, how can we explain the word itself? One bond seems to hold the various uses together: it is the emotional connotation which saves the word from total incoherence, for quite obviously Nature to Pope stands for that which is good, that of which he approves.

This freshman writer may not have the critical grasp of an adult of Pope's 'thought', but surely no one would deny that she is considerably closer to such a

grasp than are her appreciatively generalizing contemporaries. Her paper is not an isolated example; other students of this group submitted similar studies of Pope's use of such capitalized abstractions as *Passion*, *Reason*, *Wit*, *Order*, and *Happiness*. They were not, of course, all equally successful; a few were obviously floundering. But nearly all reflected awareness of the problems of evaluation involved; none succumbed as completely to the hypnotic sententiousness of Pope's epigrams as did students in the control group.

Since our studies of Arnold's essays produced essentially similar results, I shall not describe them in detail. Students in the control group reacted in an almost completely signal manner to such Arnoldian pronouncements as 'The pursuit of perfection, then, is the pursuit of sweetness and light,' finding them 'gems of thought' and 'sublimely beautiful utterances of profound wisdom'. The semantics-trained students wanted to know what Arnold tried to convey by such statements; in their papers they sought to penetrate oracular sound and arrive at suitable interpretation.

III

My description of the procedure and results of this investigation has been such as to obviate more than the briefest of summarizing statements. I am convinced that training in general semantics was effective in breaking down the tendency of beginning college students to read 'masterpieces of literature' uncritically, and to compose 'criticisms' of these works consisting of stereotyped appreciative generalizations. General semantics training weakens these conventional signal reactions and develops a more maturely critical approach to literature, an approach which is surely an essential preliminary to understanding and valid appraisal.

Recommendations to which this investigation has led me include the following. Obviously, familiarity with the principles and methodology of general semantics needs to be much more widespread among college English teachers than it yet is. Almost as obviously, attention should be focussed on the problem of finding for general semantics a place in the curriculum commensurate with its importance to all fields of collegiate study. Squeezing this training into existing freshman courses is at best an initial step to be taken where more satisfactory arrangements are not feasible, but the ultimate goal, I feel, should be a separate course taught by a thoroughly trained instructor.* Less obviously, we need more precise instruments for measuring the particular types of evaluation, or abilities and attitudes, which are involved in the study of literature and which are susceptible to favorable development by a training in general semantics. Such instruments are essential to efficient utilization of this training in the study of literature. From continued experimentation, by teachers of literature and workers in educational research, an increasingly effective teaching methodology will evolve, but the process will obviously be expedited when there are available the means of measuring more precisely than is now possible the results of our experimentation.

* Editor's Note: Such a course as Mr. Moore suggests is now being taught in several universities. Mr. Wendell Johnson, of the Department of Psychology and Speech Pathology, has offered such a course at the University of Iowa since 1937 under various titles. Mr. Irving J. Lee, of the Department of Speech at Northwestern University, has offered similar courses under the titles 'Language and Thought' and 'General Semantics'.

AN ACCOUNT OF A LIBERAL ARTS COURSE IN ENGLISH COMPOSITION BASED ON GENERAL SEMANTICS

AS TAUGHT AT OLIVET COLLEGE, MICHIGAN, FROM 1937 TO 1941

VIRGINIA M. SHULL, P.H.D.

(ABRIDGEMENT*)

Four years ago I began work at Olivet College for the express purpose of creating a course in English composition based on Korzybski's formulations of general semantics. It seems time that some of my experiences in making this experiment are made public.

This paper is chiefly concerned with 'how', not with 'why'. Students of general semantics know what can be achieved; they also know that 'proof' of achievement, or even direct evidence of it, is difficult to obtain. They realize that, once obtained, such evidence is almost impossible to interpret because they are always aware of the multiplicity of factors involved. What I can contribute is a frank and critical discussion of my own methods.

At Olivet the teacher has almost complete freedom in organizing his course. I meet my approximately one hundred freshmen twice a week—once in groups of twenty-five for lectures and general discussions, and once in groups of about eight for individual questions and problems.

I use as my main vehicle the weekly theme, but I wish to emphasize the difference between my treatment of it and the traditional. The first difference lies in the nature of the topics assigned; the second in the method with which the topics are treated. The topics I chose in the first section were mainly clichés, over-simplifications, and stock ideas about social, class, and individual problems such as 'Mother knows best', 'Few decent and worth-while men get on relief', and 'Laboring people need to be led by their betters'. The method consists of insisting that each student stick to the 'facts',

* This abridgement includes some portions of a forty-page manuscript supplemented with twenty-five sample work-sheets as examples of weekly class assignments and examinations in 1940-41. Unhappily it does not indicate the non-elementalistic approach and the broad framework in which the author sets her critical observations and vigorous discussion of her own work and the state of liberal arts education. In the full text various experimental forms of presentation and administration of the course content and procedures and their relative effectiveness are considered in the context of the tutorial instruction program at Olivet College. The discussion clarifies some of the mechanisms that produce inadequacies and failures in teaching and testing which have received very little professional attention in English curricula, and it highlights the inter-relations of issues particularized in English teaching with some of the deeper, more subtle and pervasive deficiencies in general education. The paper also includes some observations on the semantics of metaphor, discussed in relation to effective communication and interpretation and challenging the superficial treatment of metaphor in current teaching. This extensive contribution merited more pages than our exigencies of publication allowed and at the time of preparing this volume for the press, a host of difficulties stood in the way of securing a revised manuscript. To my regret we have to content ourselves with this over-simplified abridgement. We hope this is only a temporary deprivation since Miss Shull resigned from the Olivet faculty for the purpose, among others, of writing a book on the teaching of English. This book will, we understand, be an enlargement of her contribution to the Congress.—*Editor*.

to individual experience, to carefully examined 'authorities', and that 'conclusions' arrived at follow from the 'facts' presented.

All papers assigned in the course are 'essays'. The importance of this can not be overestimated. In an essay, the student is set certain problems for study, must examine the facts, clarify his notions and assumptions, and then present his conclusions. Naturally he will need 'exposition', 'description', and 'argumentation', and he may have to 'narrate'. Thus, various so-called and traditional problems of writing are not neglected, but properly subordinated. It is clear how conveniently the formulations of general semantics may be applied to this type of work. Commonly, composition courses focus attention on saying things glibly or 'originally'—training in appealing to, but not in understanding of, 'signal reactions'—while the important thing, *what* is said, is neglected. I do not intend to further such an obvious method for the propagation of false knowledge.

I divide my year's program into two main sections. The first, taking more than half the time, deals with clarifying the students' methods of 'thinking'—in other words, with the applications of the formulations of general semantics. The second deals with language itself, English in particular, with etymological and linguistic problems, and with problems of interpretation, especially of metaphors. In the first of these sections, the most important for this paper, my entire work is still in the process of development and I already plan changes, though of necessity this paper limits itself to methods already employed.

The first section has five subdivisions beginning with 'Extension'. Here, the emphasis is placed on gathering data from one's own experience. I refuse to accept catch phrases which exhibit stock values, and I force the student to 'exhibit the individual', to scrutinize carefully all materials. This is carried over into all class discussions. Constant use is made of such questions as 'Just whom do you mean by *we*?' and 'How *many* Germans have you known?' The result I strive for is a sounder basis for all generalizations and a clearer realization of their limitations. Important to this is what I call 'range of extension'. Whether you consider Mr. Roosevelt a 'liberal' or a 'radical' depends on your 'range of extension' as an individual; so does whether you consider the room you rent to be 'impossibly narrow and cramped'. Many arguments arise out of where one category ends and another begins, and I strive for an understanding of each other's particular 'range of extension' for points under dispute.

The next general heading is 'Signal Reactions'. Here I attempt to make the student conscious of the mechanisms involved in the functioning of the nervous system, and I stress 'canalization' and conditioning. I introduce the implications of the elementalistic, split nature of language, and the effect on the nervous system of these primitive notions. The class attempts to translate such notions as 'Mind is superior to matter' into descriptive formulations that match modern knowledge, and an effort is made to search out and examine the more troublesome 'inferential' terms.

The third topic, 'Logical Fallacies', is relatively simple. Examples are examined for premises based on false knowledge, for neglect of the multiplicity of causes, for either-or, black-and-white distinctions, and for conclusions involving 'all-ness'. We examine pre-war opinions about the strength of the Red Army, about the effect of actual war on the Nazi regime, and the like. The main hope here is to expose the students to

enough unsuspected examples of fallacious generalization to acquaint them with the pattern and to frighten them out of unwarranted self-assurance.

The section, 'Facts' on various levels, is perhaps the most successful. Students select such subjects as 'The British in India', 'Inside Nazi Europe', and the 'C.I.O.', dealing with contemporary problems, a field in which the most slipshod judgments appear. Each student does research under instructions to omit 'all' sheer opinion. Questionable data is carefully appraised, inferential data distinguished from descriptive. After two weeks of research and discussion, writing begins. Major conclusions must be held within the bounds of the facts presented. Perhaps the most interesting and valuable consequence is that most students feel *after* investigation that they actually know very little, whereas they were very sure of their opinions beforehand.

The last main heading is 'Authority'. Here we discover not only that left-wing magazines stand for certain sets of values which can be described instead of merely labelled, but also that such periodicals as *Time* and *The Reader's Digest* have enough inferential material to constitute a program. The section really consists of applying what other sections have covered to judging sources of information, thus providing a method for dealing with larger questions of authority during the rest of their education.

I will not devote much space to the second section of my course. I take up the structure of language, the importance of etymology, and try to distinguish between language that is 'bad' because it is not acceptable in Mrs. Astor's parlor, and that 'bad' because it is simply not adequate. We examine modern literature, with especial emphasis on metaphor designed toward understanding the author's intention and the functional rôle of metaphor in language.

Throughout my work, I find it advisable to make the use of the extensional devices of general semantics implicit rather than explicit. With many students, the new terminology is simply taken up as catch phrases to be used as an irritant in irrelevant remarks like 'Why don't you extensionalize?' and 'Be semantic!' Instead of forces for clarification, the devices may thus become obscure clichés. The alternative is for the teacher to keep permanently aware of the implications of the devices, and, by astute questionings, focus the student's attention on the *facts* rather than the *words* of extensional analysis. However, privately, I frequently do explain the devices to individuals.

It may be asked why I have not used Hayakawa's *Language In Action* in my work. I have not, for reasons which I will state categorically. First I wanted to avoid anything like rote learning of semantic 'ideas', and to focus on the practice, the *feel* of the principles working in the real world; second, many of the examples used to illustrate various phenomena in too many cases simply aren't 'true'; third, I object to what I consider the tone of 'writing down' to students; and fourth, the discussion of 'affective language' does not hold water. These four were enough to make me prefer my own mode of working. Also I should state that I have tried to keep Stuart Chase's *Tyranny of Words* out of students' hands. With reference to the use of higher order abstractions, such as 'freedom', he leaves students with a strong impression that all use of higher abstractions is a 'bad' thing. This impression is so strong that I find it hard to undo and there are many other glaring distortions of this sort.

The most obvious failure I find in my work is that there is not enough emphasis on 'Predictability' and 'Self-reflexiveness'. These I hope to incorporate soon. My biggest disappointment lies in the persistence of many of the deeper signal reactions among most of my students, especially in fields involving religion, sex, and class or race hatreds.

I do see many instances of improvement in my students in 'facing facts', or in interpreting the remarks of our visiting speakers. I frequently note the tenor of their letters to the school paper expressing their objections to issues involving unjustified generalizations. I am told by college authorities that a remarkable showing has been made in results on 'Interpretation of Data' tests in the college testing program, part of which I feel confident results from their training in general semantics.

In conclusion I must add that I find method alone insufficient training for the teacher who wishes to conduct a course in semantic analysis. The formulations of general semantics must be his basic training, but he must also wade through great fields of linguistic nonsense about political and social problems in order to cope with these distortions. Only after he understands the prevalent fallacies will he find the facts accessible to him, and I cannot stress too much that, to be effective, the teacher must be able to supplement the method of general semantics by facts, facts, facts!

Although in many respects this paper sounds largely critical, this is simply because I believed critical remarks would be most useful, since most of us are now primarily preoccupied with *how* to apply general semantics most effectively. Certainly the experience I have had in creating this course has spoiled me thoroughly for other sorts of courses in teaching English. This approach has significance, brings writing into some relation to human needs and human efforts. I feel that I am actually educating my students instead of merely weeding out those who can write from those who can not. And at least, I am not training them in useless knowledge.

GENERAL SEMANTICS METHODOLOGY IN COLLEGE ENGLISH TEACHING

REPORT OF RESULTS IN A FRESHMAN ENGLISH COURSE AT SYRACUSE UNIVERSITY

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GENERAL CONTEXT OF THE EXPERIMENT

At Syracuse University during the academic year 1940-1941, we have based the course in English for freshmen upon introductory training in general semantics. In this report, I will attempt to formulate some of the 'results' of this experiment, and to report some of the techniques employed to train students to analyze language in its context and to become aware of word-fact relationships. Our experiment involved approximately fourteen hundred freshmen and twenty instructors, and hence represents a rather large scale application of methods suggested by general semantics, under the classroom conditions of a large university.

In such a large scale preliminary experiment, of course, there are too many uncontrolled factors for us to state that we have 'proved' any one definite hypothesis, nor indeed did we set out to do so. However, in the working out of the course we planned, some very interesting results occurred. We believe that some of the changes in the 'attitudes' and orientations of the students are definite and important enough to be reported to this Congress.

At Syracuse, English I is a course 'required' of all freshmen in the University. The course is taught, in sections of thirty students each, by about twenty instructors. The selection of texts and a generalized statement of course content and 'aim' is made by a committee representing the department. However, in teaching practice each section is independent of the others and instructors have freedom and authority to select methods and to plan the actual content of the class hours to implement the general 'purpose' of the course. In the sections, students from all colleges and departments come together, and normally each section stays together all year—i.e. the freshman has the same instructor for both semesters. The sectioning is not done on any special basis of 'intelligence' or 'ability' in the first semester, so that sections generally form rather representative samplings of the University's Freshman class.

In the Syracuse University curriculum, English I is considered a 'tool subject' rather than a 'content' course. In other words, our staff is supposed to teach the freshmen to read and write. Like most other college English departments, we have in the past used a variety of methods and of textbooks, and our instructors have differed about what the English course 'ought' to be. Very generally, our practice has been to concentrate on the study of language and on reading and writing problems in the first semester, and on the study of 'modern literature' during the second.

In this course, we wanted a method which would be more efficient than the traditional techniques of instruction in grammar and usage and the traditional 'literary analysis' of essays, poems, etc., for helping students attain a 'balanced mental outlook', a method of proper evaluation of situations, the 'cultured' and 'educated' liberality and efficiency which higher education is by some people supposed automatically to confer. These desired characteristics have been perhaps more frequently the 'ideals' rather than the 'results' of education as practiced by the humanities divisions of universities, partly, we felt, because traditional methods and content did not force the student to uncover and take account of the basic assumptions and identifications which he brought to situations. The work of Korzybski and others convinced us that a very hopeful suggestion for improving this unfortunate situation lay in teaching the student a general scientific attitude toward the language in which he formulates his problems.

For student difficulties in English are only partly a matter of 'bad grammar' and 'inadequate vocabulary'. Many students have a fluent verbal skill, and yet betray mis-evaluations and a complete lack of awareness of verbal traps. For some of them, their linguistic habits, semantic reactions, patterns of behavior and 'thought' prevent a satisfactory adjustment to their new college environment. We could not expect to get 'good writing' nor 'intelligent reading' until they had got a certain maturity of evaluation. The training devices taught by Korzybski (training in consciousness of abstracting, delay of reaction, etc.) seemed to us to furnish a workable method of accomplishing the desired re-direction in student attitudes—in other words, for carrying out the ancient 'ideal' of university education, teaching students 'how to think', how to make reading and writing a co-operative, enjoyable and growth-promoting experience.¹

We set up the course according to this general plan: a semester's work in analysis of language, using Hayakawa's *Language in Action*² as a basic text, supplemented by explanations and examples by the instructor; continuation of the work in the second semester, with more discussion and more complex examples, mostly in modern literature.

So much for our 'purposes', 'aims', etc. We made no special effort to 'plan a course' in detail. Instead of an English course with a set content of 'subject matter', we thought of the year's work as the task of changing the students' reactions to what they read and hear so that they would be able to evaluate properly language as they use it and as they read it. This approach to the students and to the problems required a considerable shift in orientation and methods by many of the instructors themselves, and we decided to let the working out of the new course suggest procedures as it developed, rather than to set up procedures in advance. In retrospect, it seems that this opportunistic approach was the wiser one.

CLASSROOM PROCEDURES

Students, like the rest of us, often react to (and write about), not the 'objective' situation itself, but rather some verbal abstraction from that situation which they treat

¹ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

² S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace and Co., 1941).

as if it were the extensional situation itself. Some of them do not realize that some one else may make a different abstraction: they feel that 'any normal human being' would evaluate exactly as they do in that situation. Now if reading is to add to the student's 'wisdom', it must be a vicarious participation in experiences and attitudes not his own. But this widening of experience is exactly what is prevented by the language habits just indicated. Of course this same confusion between map and territory—'my own' abstraction and empirical fact—also underlies prejudice, 'muddle-headedness', maladjustment, etc. What we wanted to do was to go to the neuro-semantic mechanisms, that is, to change the students' identifications and general attitudes toward language. If this could be done, we felt that the student's writing would become more effective and his social evaluations more mature.

The easiest symptom to show by actual example is simple 'misreading'. A sentence is not examined to find what 'territory' the author's 'map' represents; it is assumed that the author is using the words exactly as the student may happen to use them himself. Many students seem unaware that their own (unanalyzed 'emotional') interpretations of a word are not *everybody's* interpretations. Hence they will tend to assume that what they read from a book is what 'it says'. I can give a number of examples which are not exceptional but rather the usual reaction in an untrained class. Robert Frost has a poem called 'The Lone Striker', a simple, rather obvious poem in which a workman is forced to wait outside the factory gates for half-an-hour as a penalty for being late. Frost describes him waiting in the line, 'He stood rebuked and *unemployed*.' Not looking at the context (which makes it clear that his pay is to be docked half-an-hour), most of the class wrote that this was a poem about *unemployment*, men displaced by machines, etc. Some of them wrote very eloquently on this topic, which is not mentioned in Frost's poem. In conferences, with their analysis and the poem in front of us, the students saw what they had done. Some of them were bewildered. 'But is Frost using *unemployed* correctly? Doesn't it mean not having a job?' (This is the depression generation speaking!)

Another clear case of the same attitude toward words (one word—one meaning) occurred in one section in an article about 'Roosevelt' (Teddy): many students immediately read in 'FDR' and were considerably baffled by the characteristics ascribed to 'Roosevelt' in the article.

What we have here is a habit of reading in which the context (even the purely *verbal* context) is neglected. This habit has been reinforced and given 'prestige' by the attitude of uncritical acceptance toward the authority of the dictionary taught in many high schools.

The most important procedure for 'cure' for most students was simply to make the student realize that he had neglected the context—i.e. was not conscious of abstracting. This realization made many of them feel a little 'silly' and alert not to do it again, as well as receptive of an explanation of how they came to do it. (It is very important, of course, to make *him* say he is silly; not to say it yourself.) We rubbed in the lesson with class exercises showing how the 'same' word could convey very different 'meanings' in different contexts. To many students this seemed a refreshing discovery and they readily added to the examples of modification by context which the instructor supplied. It is important that throughout the semester state-

ments, etc., should never be considered except in context, because students easily fall back into the habit of calling statements 'absolutely right' or 'absolutely wrong'. This work tended to direct their attention from words to the *situations* the words talked about.

When the article being read dealt with higher order abstractions (Communism, Democracy, etc.) reading was still more a matter of *reading in* the reader's former associations, and reactions to the words. We found that it remained pretty much just that until the students had had considerable training in translating these abstractions 'downward' on the 'abstraction ladder'.³ Their whole training in considering high order abstractions had been in the direction of finding out what these 'really were'—i.e. of learning and defending or attacking some definition. The most successful procedure that we found for changing this orientation-by-definition was to insist upon the student's finding out what behaviors, relationships, etc., the author was labelling with his abstraction, and what background premises and assumptions were implied by his statement. This practice of considering the context and requiring analysis before agreement or disagreement introduced a check or delay which made the student aware of his own signal reactions to words.

The same attitude toward words shows up frequently in the writing of those students who feel that it is the reader's duty to understand 'what I meant'. Sentences, judgments, etc., whose context is private and unexpressed are written down, the problem of audience understanding not having been at all considered. What we tried to do to remedy this was to promote an awareness of audience: for instance, one instructor had his class write successive papers on like subjects for different audiences (their parents, their 'pals', etc.). In conferences over the papers written, it was possible to point out suppressed contexts, unconscious assumptions, etc. By the end of the semester most students were much more aware of the necessity of *communication*, of 'getting something across' to their reader, than they had been previously. Of course, in this work, each student is an individual problem, the more so since frequently cryptic and 'private' writing is a symptom of considerable psychological turmoil.

The second problem, upon which classroom attention was concentrated, was promoting awareness of word-fact relationships by requiring students to write a considerable amount of verifiable 'report language' prose: that is, describing happenings in language from which they attempted to exclude *their own* judgments and inferences. This proves extraordinarily difficult for many students; a few of them were never able to do it, and some had to re-write their original attempts five or six times.

The report-writing exercises brought forth a variety of student reactions. To begin with, many students felt the first exercise 'silly'; that is, too easy, rather below the dignity of college men and women. When they couldn't do it, they were either puzzled and interested, or angry. Some continued with violent resistance to the whole exercise: these were either students having facility in 'flowing' language, an academic investment which had always paid them well, or students with deep-rooted intensional orientations.

³Cf. Hayakawa's adaptation of Korzybski's structural differential in *Language In Action*, *op. cit.*

Besides these special cases, the rest of the class were rather honestly puzzled, not being able to see why 'glamorous' or 'sophisticated', for instance, were not report-statements. The second group of reports showed interesting unconscious evasions of the task of writing strictly verifiable statements. This exercise brought in a crop of 'reports' of sports events and of fraternity meetings, all couched in the ritual jargon of sports-writers or of 'secretaries'. Several other students 'refused' to report actual happenings, and gave accounts of wished-for-events, such as 'a perfect blind date', which they later confessed to be fictional. Many students found it difficult to see why these were not classifiable as reports, and the discussions of this point ramified into class investigations of the social function of the language their pseudo-reports had been modelled upon.

Most important and most difficult to deal with of all the established language habits, we found, was the tendency to project stereotypes into the outside world and to deal with these fictions *as facts*. Students' first essays were full of generalizations about 'the average student', 'the *real* athlete', a 'true patriot', etc. 'A real mother cherishes and loves her children' wrote one of my students as a verifiable report of a happening. When this was questioned by the class, she admitted it was not report, but insisted that it was a valid generalization from experience, mothers who beat their children not being *real* mothers.

This point proved to be of prime importance. The intensional orientations of many students were expressed in just such confusions of 'what ought to be' with 'what is'. These orientations had been considerably reinforced by previous training by a certain kind of high school English teacher, to whom 'English' is supposed to teach the 'right' or 'pleasant' thing to say about literature, life, etc. Some students resisted violently realistic descriptions of their 'ideals'. The discussions which grew from points of this sort were very 'tricky' to handle, because some clever students were always ready to feel that they were being taught a good 'debunking' technique and nothing else.

Properly handled, however, these discussions were extremely valuable: they gave many students a sound notion of the nature and social function of ritual statements, directives, and 'ideals' generally. Without some such functional instruction, many students are able to take only one of two attitudes toward 'group-directive ideals' like, say, 'Democracy'—uncritical, blind acceptance of a slogan, or cynical rejection. (They behave in ways which might be called either 'fascist' or 'defeatist'.) The discussions made many of them able to evaluate more maturely language-situations involving these 'ideal' statements, and to learn to evaluate 'ideals' and directives in terms of behavior rather than of verbal definitions. The importance of this point is obvious at the present time when the nation is acutely conscious of the responsibility of citizens to achieve and defend democratic behavior.

The work with reports took much longer than most of our staff had thought that it would. We found, however, that it gave most students a sound notion of the difference between word and event, language and what language talks about. This work broke up intensional orientations, and by making the students aware of language as a functional 'tool', forced them to consider the *effect* of statements and the characteristics of their own verbalizations.

The essays and 'themes' immediately began to have a greater content of extensional detail—that is, they began to be 'better writing' even in the humanistic sense. Technically, students began to write inductively *up to* the judgments they wished to express; i.e. they spread the facts before the reader and then generalized and inferred. When we got this far with them, we began to feel that we were accomplishing something, for almost all the students had had a specific training in high school to start with an 'introduction', a direction which many took to mean 'begin with a large and unsupported generalization.'

We felt too that we were getting somewhere when we noticed the disappearance of those empty, abstract discussions in the writing of which some students achieve in high school an astounding facility. There was a drastic decrease in mere verbalism written in response to an 'assignment'. We were especially encouraged by this, because every English teacher has the problem of dealing with the slick, grammatically correct, 'padded' essay.

Still more important probably were the different lines of class-discussion into which the work with 'reports' broadened out. First, of course, it led directly to discussion and lecture-demonstrations of different levels or orders of abstraction. The instructor could use the adapted diagram of Korzybski's structural differential printed in *Language in Action* to follow up the work in 'reports' with an explanation of the differential and its importance and use. This also provided an opportunity to introduce indexing, dating, the etc., negative premises, etc.

The third classroom concentration was directly upon intensional and two-valued orientations. Here our method was largely to analyze *in context* verbal utterances, cartoons, etc., which showed that the writer was projecting his intensional definitions upon a group or class of individuals. Here cartoons were particularly effective. We began with quotations representing rather violent prejudices, over-simplifications, etc. The student's whole previous training led him to 'agree' or 'disagree' with these statements, to label them 'right' or 'wrong'. The analysis-in-context procedure forced him to study them first before giving his opinion. He had to state first how the language was being used—what patterns of value, 'ideas', stereotypes, etc., the writer seemed to hold, what the writer's semantic reactions (pleasant-unpleasant, acceptance-rejection, etc.) to key-words seemed to be—and *only then* was the student allowed to state his judgment about the statement. Thus during the exercise he had to practice delay of reactions and evaluations based on a more thorough understanding of the sentences. Students came to consider and study statements and 'ideas' which previously they would have dismissed, seeing what premises and assumptions the statements involved, and noting how they operated in a social context.

It was agreed by most instructors that more students benefited from these exercises than from any others. One very common student experience made it easy to drive home the discussion of intensional orientations. Each student had brought with him a 'picture' of the 'college environment' he had expected to find: certain aspects of the actually existent college life he found were not 'what the picture predicted'. The resultant puzzlement presented the teacher with one of the most potentially useful experiences with which to work. This puzzlement, if only on some minor matter—the attitudes of instructors, the age of buildings, the conversation in sororities and

fraternities, etc.—is a total-organism reaction wherein stereotypes and verbal 'wishful' description of the world have proved *not* to be the world, and the student welcomes as *relief* from his puzzlement the general semantics explanation of how he 'got that way'.

It is impossible within reasonable limits to discuss any great number of the procedures used in the course. Perhaps the examples given will be sufficient to indicate the kinds of exercises we used to promote consciousness of abstracting, extensional orientations, etc. Generally, we required students to write of situations in which they found themselves, or of other situations presented visually to them in pictures or cartoons, or more indirectly in literature. In so far as we could, we showed them in their own work evidences of two-valued orientations, signal reactions, arguments from definitions and verbal fictions, etc., which they themselves had written, and reinforced the lesson with explanations of the mechanisms involved.

STUDENT AND FACULTY REACTIONS

It is extremely difficult to state unambiguously the 'results' of a single course upon students who are reacting at the same time to dozens of other stimuli in a complex environment new to them; the complexity is increased with our English I course by differences in personality, training, etc., of the various instructors, resulting in different emphases in presentation. Hence my statements of results and conclusions must be tentative and generalized. However, I have checked my generalizations from my own observations against those of other instructors and those of personnel counsellors in the University.

Perhaps the most interesting statements of the results which I can present are those formulated by the students themselves. At the end of the course, we asked students to write a considered critique of the year's work, a frank statement of what use they had found it to be to them. Their answers were surprisingly definite.

First of all, the course was popular and students felt they had got their money's worth. A ten percent minority were violently hostile (of which more later); the rest reported in terms which suggested that they felt that the course was responsible for a new flexibility, ease of 'thinking', and release from puzzlement and tension which they felt they had.

Secondly, most students felt that they had received a training which was not 'mere classroom stuff', but which was applicable in their other studies and in life-situations. In other words, they felt they had received some training designed to integrate what they learned from all sources and to erase the unfortunate 'splitting' which many of them noticed between school-attitudes and life-attitudes, and between 'subject' and 'subject' in the school.

Thirdly, students felt that they could read better, could write better, and would never be so naïvely unaware of the dangers in language as they had once been. With most of them this confidence, I feel, was justified.

Here, for example, are excerpts from a few of these student analyses to illustrate the kind of statement upon which these three generalizations are built:

After my course in semantics, when I hear a man labelled as anything, I try to take him as himself, not as a word with nasty connotations.

On several occasions, I found myself misinterpreting what other individuals said. Their words meant something entirely different to me from what the speaker intended to convey. I caused many uncalled for arguments and disagreements. After I understood this, many of these incidents disappeared. I try to imagine what the other person means when he says something, in terms of his mind, not my own.

I try not to project my prejudices, not to jump as I am directed by words like 'Jew' or 'Red'. I try to stop and analyze for a few seconds before I do anything.

I have learned to be more critical, that is, not to just accept statements because I see them in print. I have learned not to be proud of being dogmatic. As a result of the semantic training, we are able to read with more comprehension of what the author wanted to say and with fewer signal reactions toward his words and form. For instance, I now read many 'poems' with enjoyment, although I once did not enjoy 'poetry'.

This semantic study of our language has been a fascinating science. I had scientific training in chemistry and physics, but since these subjects are *classified* as sciences, I never extended the training to other subjects. Now, in any of my studies, when I make a statement, I try to think about it just as I would in chem. lab.

This course was practical. It is one of the few courses which can be applied to every day living. I get into many fewer pointless arguments and I think we learn more from each other in bull-sessions and arguments.

I regret that it is impossible to give verbatim many more of these reports by students, because they are very suggestive to the teacher of what the students felt was the 'real meat' in the course. Perhaps they overestimated the extent to which they had gained skill in reading and freedom from signal reactions. But there was, all instructors agreed, an increasing tendency to check statements against the extensional 'facts' rather than to react to words alone. Of course, for some students there remained some situations in which they were 'emotionally' involved and in which the old word-patterns held true as if 'fact'. Although some students learned only the terminology of the system as used in *Language in Action*, many others seemed to be carrying over the method of evaluation into other life-situations. All instructors reported a gain in reading skill far greater than that produced by methods they had previously used. They also agreed that class discussions were more rewarding, because of greater student interest and co-operation.

Two important points of theoretical interest should be noted. In regard to class-discussions, since most of them developed from analysis of statements, they generally represented co-operative attempts to understand the situation under consideration, and hence considerable forensic 'argument for victory' or for prestige was avoided. *Language was being used co-operatively rather than competitively.*

The other point is that there were practically no indifferent or disinterested students. The people who disliked the course did so thoroughly, and were violent in their statements of opposition. Almost all students went through a period of 'not liking' what we were doing, because our procedures were not what they had expected. 'Is this English?' they asked. With most, this was succeeded by interest and, frequently, enthusiasm. A minority, as I mentioned above, remained belligerently hostile, generally because the new methods of procedure represented a threat to an accustomed

writing behavior or because the intensional orientations of the student were very deeply canalized neurologically so that any change was acutely painful. It is interesting for comparison to quote some of the essays of these students.

Many students were disconcerted by Hayakawa's book because it introduced new ideas and college students did not want to be guinea pigs. College students do not like to give up their old ideas, they are very conservative.

It has made many of us cocky and cynical. We exaggerate and enlarge upon the little we have learned to prove that we are being educated. Some of us question perfectly clear statements and have a permanent cynical and exaggerated suspicion of all statements.

This course in Semantics did not do me any good. Except for understanding 'signal reactions' it was all Greek to me. I was prejudiced against it, because I wanted a course to teach me to read literature and I still read the same as always. The course was a loss to me, except I do have more fun reading the ads and figuring out their appeal.

Language in Action was very interesting and true enough, but so what? The book's ideas have made little impression on me, in that I don't practice them, but that is my own fault. I 'have to learn' the stuff and this 'blocks my mind'. Since it's school work, I think it is the bunk, even if I like it.

A report such as this obviously cannot 'tell all' about an experiment as large and as complex as ours at Syracuse, and with as many uncontrolled factors as ours had. I have attempted to generalize from a few of the observations we were rather sure about. Almost all our staff expressed themselves as pleased and satisfied with the conduct and the results of the year's work. The general feeling seemed to be that the teaching had been 'hard work' because of the necessity of gathering examples, situations, etc., for analysis, but gratifying, and instructive for teacher and student both, since the work focussed attention on personalities and situations rather than on codified 'subject matter'. The general semantics methods proved readily *usable* under classroom conditions. Most of all, we felt that the analysis of language situations had, for a gratifyingly large proportion of students, proved itself a 'moral'—i.e. a total-organismic—as well as an 'intellectual' discipline.

REMARKS ON BY-PRODUCTS OF MY USE OF GENERAL SEMANTICS IN TEACHING FRESHMAN ENGLISH

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It was requested that I say a word about my experience with general semantics in my class room. Since I did not teach it specifically, I can only tell you about the by-products which seem to have resulted from my using the principles and the techniques in my regular freshman English work.

At the end of the year I had the freshmen write class themes on what they regarded as the most valuable part of the English course as I taught it. About 40 percent specifically said general semantics, about 20 percent more indirectly indicated the general semantics approach. After the final English examination the brightest freshman I had spoke to me in appreciation of the course and said, 'If general semantics was all I had learned about this year, I would still consider the course well worth while.' We used a model of the structural differential continually, in grammar, logic, literary criticism, précis work, speech-making, composition work. Indeed, one day a freshman came to me and said, 'Lieutenant, I was sitting in class today listening to you talking about general semantics when all of a sudden I saw the relationship between all my courses. Before, they were walled off separately; now I can see how each one ties in with the other.' He was genuinely excited.

Two boys, one a brilliant freshman who would have gone to Oxford from Harrow had not the war broken out, the other, top-standing man in the sophomore class, met me at their own suggestion, two hours each week for special instruction in general semantics. Both seemed to profit from this work, especially in analyzing the actions and words of others.

Besides making a great improvement in my own orientation toward life, general semantics has provided me with a more solid core and a more flexible periphery, so to say. I feel that I can get to the bottom of most problems that arise when I treat them as problems in human behavior and when I apply the general semantics principles. Hence the solid core of sound doctrine. The flexibility, needless to say, comes with a recognition of S_1 (i.e. Student₁), S_2 , S_3 , S_n , and of P_1 (i.e. Premise₁), P_2 , etc. Indeed, let an argument arise in class and the group response is almost immediate: ' P_1 , P_2 !'. The director of the committee on student affairs asked me if I thought that general semantics had had any influence on my function as a teacher. I said, 'Yes. Why?' 'Because', he said, 'you are one of the two (out of twelve) most popular men in your department. The boys feel confident of getting a fairly unprejudiced viewpoint from you.' I believe this was simply a recognition of the predictability and the flexibility (and hence respect plus friendship from pupils) which any teacher is bound to have who tries to apply general semantics principles.

APPLICATION OF EXTENSIONAL METHODS IN THE TEACHING OF ELEMENTARY FOREIGN LANGUAGE

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There is little room for disagreement on the fact that foreign language instruction in our schools seems to be on the defensive. The long accepted goals of this instruction—generally intended to be fluent writing and speaking, as well as reading ability—have been found largely impossible of achievement in our modern educational setup. Peter Hagboldt¹ and others have recommended that foreign language training for most students be confined to the goal of reading ability. This, it has been demonstrated, can be attained in a reasonably short time, provided that skill in writing and speaking, etc., be abandoned as ends, and effort be concentrated on the acquiring of reading skill. This appears to be the only possible or desirable goal for nearly all high school and college students in this country. To abandon foreign language training entirely need not be considered. Reading experience in a foreign language is certainly no insignificant part of the training of educated people; researchers find it indispensable as a tool; in general it provides an experience and discipline of real significance for neuro-semantic education.

My purpose is to indicate a number of applications of extensional methods to the teaching for reading skill of an elementary foreign language as I used them (1940-41) in a course in beginning German, and to report on the beneficial results that I was able to observe. In using general semantics, I hoped to find applications for both student and teacher, and to develop, if possible, a method for training the students toward a more efficient and economical approach, which might be *generally* applicable to the problems of language learning.

My class consisted of some twenty freshmen and sophomores, and met five times a week during the academic year of three quarters. In teaching, features considered not essential to acquiring a reading skill were not stressed. Grammar was chiefly taught from the recognition standpoint. Translation into German, conversation, etc., were avoided except as aids toward the reading knowledge. The reading texts consisted of about 350 pages from the elementary *Graded German Readers*, edited by Hagboldt, and about 150 pages of more advanced text from standard German literature.² During the last quarter, the students were assigned outside reading: *Kriminalkommissar Hornleights Erlebnisse*, for intensive reading, and Friedrich Gerstäcker's *Germelshausen*, for rapid reading.³

¹ See Peter Hagboldt, *Language Learning* (Chicago: The University of Chicago Press, 1935); *The Teaching of German* (Boston: D. C. Heath and Co., 1940).

² Peter Hagboldt, *Graded German Readers*, I to VIII (New York: D. C. Heath and Co.). Other reading materials used were Theodor Storm's *Immensee*; Paul Heyse's *L'Arrabiata*; August Wilhelmi's *Einer muss heiraten*; Ludwig Thoma, *Lausbubengeschichte*, all standard editions.

³ Ludwig Thoma, *Kriminalkommissar Hornleights Erlebnisse* (New York: D. C. Heath and Co.); the D. C. Heath edition of Gerstäcker's *Germelshausen* was also used.

Training in general semantics was directly applied, whenever possible, to the problems of language learning. A great many illustrations and examples were taken from problems that arose in day-to-day work. My method of presentation was roughly as follows: I explained to the students that 'language' must be considered a system of symbols, and compared it to other systems as mathematics, maps, etc. From this start I developed the general notions of the non-aristotelian system,⁴ stressing particularly the applications to language learning.

I found the following specific applications of significant value:

Proceeding from the notion of *false knowledge*—'knowing' things that aren't so, etc.—I explained that there is no final way of how a foreign language 'ought' to be used, syntactically and grammatically. I strongly discouraged any preconceived notions of a 'logical' approach to language learning. I urged rather that the students consider the process nature of language in function and concern themselves merely with what actually happens; that they observe the processes of language idiom as these occur in standard usage without asking questions except as they might relate to the clarification of their observations of what *happens* in the language under consideration.

The students, as a group, I observed, were reluctant to abandon the habit of asking 'why' about numerous usages that seemed to differ from the way they 'thought they ought to be.' For example: the students were concerned with 'why' *sagen* (to tell, say, etc.) takes a simple dative indirect object before a noun clause, as: *Er sagte mir, ich sollte kommen* (He told me to come), while *fragen* (to ask) takes an accusative in a very similar expression: *Er fragte mich, ob ich kommen wollte* (He asked me, if I wanted to come). Some students brought out presumably 'logical' arguments about the dative case, the direct object, etc., but with all of these 'logical' arguments, they could not evade the fact that *fragen* takes an apparently 'illogical' double direct object. They seemed sufficiently shocked to consider abandoning the insistence on knowing 'why' such a phenomenon occurred and to concentrate on learning the fact that it does. Similarly, I taught the students not to identify the German usages with English, for such identification could be expected to lead back to the question of 'why' the differences occurred.

As a result of this type of training, I found it possible to give my students a frequently ignored formulation of the semantic significance of linguistic grammatical 'rules'. I trained them to regard any given grammatical rule not as some sort of statement of 'logical necessity' or 'cosmic legislation' (to borrow a phrase from Count Korzybski), to which language usage might be expected to conform, but to consider it a generalization from observed characteristics of language usage, 'valid' only so long as it conformed to the usage it described. If usage should be observed to vary from the statement of the rule, then the rule, not the usage, would be liable to modification. I found the application of Korzybski's formulation of *order* of much value in this connection, by developing the notion that the usage preceded in order the statement of rule; that the rule was not to be evaluated as on the same level of abstraction as the usage, nor identical with it. I have observed that teachers of foreign

⁴ See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

language, as a group, do not pay much attention to this formulation, nor to its semantic significance. It appears to me that it has great potential value for language learning, if realized and applied, and that a decided blockage in language learning may occur if it is ignored or denied.

I found the 'as-a-whole' evaluation of language function a very useful formulation in teaching. It is generally recognized by investigators of modern language pedagogy that 'pieces' of language, so to speak, considered in isolation, have no functional value. The student may memorize a word-list, but he will not thereby have learned the 'language'. To quote from Peter Hagboldt:

Word lists are nothing but raw material. Memorizing such lists mechanically is nothing short of medieval torture. . . . Things to remember are these: Words without context are unnatural. '*Sentence words*' are rare. Most words have several or many meanings, and we generally learn one meaning at a time. Words in context are more easily retained than isolated words.⁵

Similarly grammar, syntax, etc., if artificially separated from the language-in-function 'as-a-whole', will be of little or no use. I urged my pupils to acquire the habit of considering language functionally and to concentrate their learning effort on usage in context, in the language as-a-whole. General semantics apparently enabled the students to appreciate the significance for their own semantic reactions of these teachings, and gave them a positive reinforcement.

My students were urged to employ the following general method in attacking the language. When they met a strange word or usage in reading, I suggested that they find, if possible, an English cognate and use this as a basis of 'meaning'. This, in turn, should always be checked against the *particular* usage. I especially emphasized that they abandon identifying a given word with a general or *single* 'meaning', and that they avoid isolating this word from the usage context in which it was observed. I suggested *indexing* each usage of the word, and so avoid identifying one usage with others. To be sure, language teachers have been applying the notion of words in context for a long time, but I find that training in general semantics apparently enabled my students to realize the functional significance of the problem, and that it gave them an automatic defense against being tripped up by the cognate device itself.

I taught the fundamental non-aristotelian premises, with particular stress on their application to language learning. For instance, I used the difference in form between an English word, as *table*, and the corresponding word in German, *tisch*, as an example of the *is-not*, or non-identity of the symbol with the thing which the symbol represents, although both phonetic forms may be used in connection with the same non-verbal 'object' (or process). My experience suggests that the application of non-aristotelian premises is much broader than I had the opportunity of observing in this investigation. I observed at least this general application: that learning the premises makes the student conscious of the semantic problems of a system of language, in connection with his own semantic reactions, and gives him an automatic methodological defense against misunderstanding and confusion.

Although active use of the language—speaking, writing, etc.—was not stressed, it was used. I offered my students the following rule. As stated above, I had insisted

⁵ *The Teaching of German, op. cit.*, pp. 94-95.

that they approach the language with the point of view of observing its construction, empirically, without asking questions except in connection with the observation of the 'facts'. Since they were to follow 'facts', they should avoid using any expression that they had not encountered in standard German. This, again, is more or less standard practice, but, again, I believe that a knowledge of extensional methods as such enables the student to use the 'rule' *less mechanically*, and gives him the understanding of its functional value. I had trained my students in the general application of definition by extension and found a particular application here. Their own opinions of how the usage *ought* to be constructed must be considered to correspond to an intensional definition. Unless they could extensionally produce an example of the construction actually used in standard German, they should not permit themselves to use it; without an example the construction must invariably be considered a departure from standard usage.

In summary, I believe that my students *did* adopt the general viewpoint that I have discussed in this paper. I observed that about the middle of the course they stopped asking for a 'why' of language usage, and apparently abandoned the prejudice of a necessarily 'logical' basis of language structure.

As a group they seemed to benefit more than is usual in the application of the standard learning devices (use of cognates, words in context, etc.). It appears that the training in the extensional approach gave them a positive method generally applicable to the problems of language learning and a presumably automatic defense against much misunderstanding and misdirected effort. They appeared to thoroughly enjoy the training in general semantics, and seemed to profit by it promptly, even though I gave them no general applications outside the field of language learning.

GENERAL SEMANTICS IN TEACHING AN INTRODUCTORY COURSE IN AESTHETICS

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At Mills College for the past two years we have been offering a survey of contemporary fine arts for freshman students. This course is an experiment in staff teaching with a co-ordinator carrying the large part of the teaching load. Faculty members from the various departments in the School of Fine Arts contribute one or more lectures on their subjects of specialization. The purpose of the course is to consider the various manifestations of the contemporary arts, their materials and media, similarities and differences, verbal and non-verbal character, etc. The methods employed include lectures, discussion, student reports, notebooks, and field trips, utilizing the facilities of San Francisco to augment the course-content with concerts, plays, art exhibits, etc.

The sequence of the survey proceeds from non-verbal to verbal communication. Following an introductory section, the dance is studied in relation to its characteristics arising out of movement as a means of communication of the experiences of one individual to other individuals. Then, in succession, periods are devoted to a similar consideration of music, graphic and plastic arts, crafts, drama and literature.

In such a kaleidoscopic and brief survey of so many fields of human expression presented from the differing points of view held by specialists variously trained, the problem of helping the freshman student orient herself, and develop increasingly adaptable points of view is no small one.

So much intensional literature is published about 'art' in language so 'high-flown' and unintelligible that the freshman student is hopelessly confused if she endeavors to do any reading on the subject. There is much loose talk about 'beauty', 'pure art', 'emotion' and 'intellect', 'form', 'content', etc. Take the case of a youngster who arrives at the college from Klamath Falls, where patchwork quilts, *The Lone Wolf*, piano lessons, and a town music series consisting of one recital by Richard Crooks and a concert by the glee club from the state teachers college, together make up the 'art experience' of the community. She is likely to be considerably confused by passages such as this in her textbooks: 'It is intensified expression in the subjective sense and in truth to medium. And it borders on abstraction . . .'¹

Since, with very few exceptions, readings in aesthetics abound in intensional language and since every artist and every teacher presents a different viewpoint and uses the same terms with obviously different extensional content, I have concluded that the only way to avoid semantic chaos is to incorporate an introduction to general semantics in the introduction to this course.²

¹Sheldon Cheney, *Primer of Modern Art* (New York: Liveright, 1939), p. 172.

²General Semantics as formulated by Alfred Korzybski in *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941), and in his seminars at the Institute of General Semantics and elsewhere.

We begin with a brief study of the human nervous system as the basis for experience and communication, thalamic and cortical areas, short and long nervous circuits, organism-as-a-whole reactions, delayed reactions, cortical differentiations, levels of abstraction, etc. A large portion of this section of the course is concerned with helping to establish an understanding of the multiordinality of the terms *abstraction* and *symbolization*. We are anxious that the student become conscious of abstracting as an essential characteristic of all experience, so that, later in the course when more than one lecturer will use the terms *abstract art* or *symbolic art*, *representation*, etc., students will be able to evaluate properly the instructor's use of the word through a recognition of the specialized context in which it is used. In connection with study of these terms, we use Kretchmer's *Medical Psychology* on *sphaira*, stylization, etc.³

'Emotional art' and 'intellectual art', 'beauty' and 'ugliness', 'form' and 'content' are dichotomies which keep aestheticians busy and which totally confuse freshmen. Through the use of extensional methods we try to help the student discard two-valued orientations, and false-to-fact compartmentalizations. Stress is laid on the relativity of 'beauty' and the inseparability of 'emotion' and 'intellect'. Louis Danz' formulation of form as organization of forces is the one which is found most acceptable for our purposes. 'Form is that kind of organization to which nothing can be added and from which nothing can be taken. A mathematical definition has form.'⁴

The large part of the course deals with non-verbal forms of representation. In a world where so much stress is laid upon word symbols, this gives us a peculiar opportunity to convey to the student the vital, dynamic quality of non-verbal thalamic communication. That people generally do sense this is made apparent in such expressions as 'too moved for words', 'speechless with joy', etc.

In some quarters the term *semantics* covers only words and their 'meanings', which would rule out most of our course as far as tying it up with 'semantics' is concerned. If this is the proper and full meaning of the term, we can apply the 'rules' of semantics only to our *talking about art* and not to the actual 'art experience' or thalamic communication. On the other hand, *general semantics* as a general theory of evaluation is found to be applicable to our entire field, *non-verbal as well as verbal*.

We try to stress the fact that the organism reacts as-a-whole-in-an-environment, so that in highly affective communication of the non-verbal type there is a cortical component, which, with its potentialities for differentiation, makes for the exquisite discrimination and enjoyment of a given 'aesthetic experience'. This is in contrast to sitting in the concert hall and being aroused out of one's stupor only by the spinal shiver caused by a sudden cymbal crash.

Standards for criticism and judgment pose another difficult problem for presentation to the beginner. I am reminded of Virgil Thomson's classification of possible ways for a composer to earn his living, one of which was listed as the 'art appreciation racket'.⁵ We hope to avoid being placed in the category of 'racketeer' from our earnest

³ Ernest Kretchmer, *A Textbook of Medical Psychology* (London: Oxford University Press, 1934), p. 94.

⁴ Louis Danz, *The Psychologist Looks at Art* (London: Longmans, Green and Co., 1937), p. 80.

⁵ Virgil Thomson, *The State of Music* (New York: W. Morrow and Co., 1939). pp. 121 ff.

endeavors with this course. And, if we do successfully steer clear of such a fate, it is in no small part due to general semantics.

It has been said that one's youth, 'artistically' speaking, can be described as being in direct proportion to the range of aesthetic experiences one can 'endure'. If this is so, some of our seventeen-year-olds are artistically well over a hundred. They 'don't know anything about art but they know what they like,' etc., showing evidence of rigid 'canalizations'. So we endeavor to present a vivid picture of 'culture lag'. Although this is a course in modern art, we stress the time-binding human function of all artistic representation. With the hope that the student will broaden her horizon and avoid 'cosmic legislation' in the fields of the arts, we set up the following bases for judgment of a given art object: (1) *direct contact* with the object or event; (2) *comparison* of the object or event with others in the same class; (3) *evaluation*, which for the lay person may be summed up in the questions: Does it communicate anything to me? If so, what?

We emphasize the necessity for differentiation—recognition of the unique character of each art 'object', as well as the impossibility of knowing 'all' about any art object. We make no endeavor to establish the arts as the equivalent of mathematics, but do make use of the extensional devices in talking about the arts. Dating, of course, is necessary and it will automatically delay an immediate judgment such as 'beauty = pretty pink curves!' as well as the 'Beauty on Olympus swung free from the lowly human' notion, when the student reader sees the word *beauty* on the page. Each of the devices is found to be useful for our purposes in this course.

With this rather sketchy introduction to general semantics we plunge headlong into the specialized consideration of the various fields of modern art, as before mentioned. In the discussions following the lectures, we attempt to practise the extensional method.

The final section of the course is concerned with literature, at which time we use *Language in Action* by Hayakawa as the text.⁶ In many ways, this is the most exciting period of the course. The 'fog' which confused the first of the course has lifted, and we realize that more was learned than we had suspected. The simplicity and clarity of *Language in Action* is a boon. Not one of the students has failed to derive much benefit from its study. The exercises in the construction of 'abstraction ladders' have been the source of delight and amusement as well as instruction. On the final examination the students were asked to write five short paragraphs using the techniques of (1) slanting for, (2) slanting against, (3) map not matching territory, (4) affective communication, (5) directive language. They all enjoyed doing this very much but gave away their personal biases in the way of girlish enthusiasms, pet peeves, etc.

I believe that, for the artist as well as for the student of aesthetics, Hayakawa's formulation of affective communication is extremely helpful. As a matter of terminology I find his use of the phrase *pre-symbolic use of language* confusing in the face of our belief that gesture, posture, movement, sound are all symbolic forms of representation. However, if I have studied his book thoroughly and have come to understand his use of the term *pre-symbolic*, then my very understanding of his use of the term

⁶S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace and Co., 1941).

in a special context does away with confusion and all I can say is that his definition of pre-symbolic and symbolic differs from mine, and communication is established.

In conclusion, may I say that our foremost purpose in giving this course is to help student₁, student₂, student₃, . . . student_n to increase adaptability to the 'world' in which she finds herself. As an aid for this adaptability general semantics is applicable. It provides a general theory of evaluation which includes the silent, organismal reactions of aesthetic experience as well as providing a correct-to-fact linguistic technique for the representation and communication of those experiences. In using this methodology to forward our aim, we have laid particular stress on the importance of a thorough understanding on the part of the student of the multiordinality of terms such as *abstraction*, *representation*, etc., for proper evaluation and unification of the conflicting vocabularies used by staff lecturers from various fields of the arts. It is my earnest personal conviction that the study of general semantics is of immeasurable aid in the accomplishment of our purpose.

SOME FORMULATIONS AND METHODS OF GENERAL SEMANTICS APPLIED TO JUNIOR COLLEGE DRAMA INSTRUCTION

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(ABRIDGEMENT)

This paper outlines a few of the procedures used in applying in part certain formulations and methods of general semantics in junior college dramatic instruction. The specific applications were made for five and a half semesters (1938-41) in classes for voice development, pantomime, dialects, and radio acting at Los Angeles City College. Each class averaged between twenty-five and thirty students, ranging in age from seventeen to twenty-one, and with an almost even ratio of men to women.

Los Angeles City College emphasized at this period *semi-professional* training in some twenty-four departments. The drama department, however, insisted upon a *professional* point of view. It maintained a heavy production schedule in its Little Theatre whose activities dictated its course of study. It dealt with students from the standpoint of the standards of the Broadway stage and the commercial theatre. Such a policy promoted technical competence but left little time for any consideration of the 'personality adjustment' or development of students.

Some two hundred students enrolled each semester as drama majors during the time I taught in this department. Yet a very small percent completed its prescribed training. The ratio of this decrease appeared as follows: a hundred took the first semester's work, half this number the second semester's training, from thirty-five to twenty-five the third semester, and the fourth and supposedly last semester, from ten to fifteen students.

This made a teaching situation in which most students stopped their dramatic training after one or two semesters. It seemed to me to warrant—at least in the classes assigned for my instruction—some effort to deal with students' organisms-as-a-whole reacting in an actual rather than in merely a mimic world, and the use of a generalized method of problem-solving applicable to life-issues. It seemed important also that students recognize that no problem of technical specialization was unrelated to the use of their nervous systems.

Further, with a background of a dozen years of professional dramatic experience, I was led to certain working hypotheses about 'types' of drama majors, e.g. (1) most students who enter specialized dramatic courses have a tendency toward 'exhibitionism', frequently accompanied by feelings of inferiority or insecurity; (2) many students enter such courses believing that more rigorous academic disciplines do not appeal to them; (3) some students enter such courses believing they are 'temperamentally' more attracted to 'aesthetic' reactions than to scientific interests or 'everyday-living'. The observations of several drama instructors in other institutions also confirmed these hypotheses.

This lack of adult life-evaluations, together with the particular teaching situation in which I found myself, led me to believe that it would be valuable to apply general semantics to drama instruction. In fact, it seemed to me it was badly needed. I had studied general semantics since 1935,¹ and had made several experimental applications of its methodology in work with various adult groups.

The use of the formulations and methods of general semantics employed in teaching drama entailed no formal presentation of its system per se. There was no aim to teach students about general semantics. The approach and set-up focused on *doing* applications by both the teacher and student that might forward individual and group development.

The following formulations entered specifically into the work attempted in each course: (1) *Orientations* for order, function, relation and finally structure; (2) *Devices* for seeing differences, delaying reactions and for remembering the not-all in one's reactions (etcetera, factors left out, unknown or forgotten—the *x* in every generalization); (3) *Evaluations* in the natural order to see relations more clearly and get flexible functionings and integrations. This was done from the standpoint that *first-order facts are more important* than verbal descriptions, lower-order inferences more than higher-order ones, etc.

Systematic experimentation with the above for five and a half semesters resulted in the general though tentative procedures which follow.

IN PREPARATION OF COURSES: An analysis of each course before giving it each time was made to revise its contents, presentations, assignments and goals in relation to general semantics formulations; increasing attention was given to applying the extensional devices as much as possible and in new ways. Roughly speaking, from the general semantics standpoint, this revision of courses was directed toward the following emphases: (1) in 'Dialects', *the seeing of differences*; (2) in 'Pantomime', *the objective yet un-speakable level*; (3) in 'Radio-Acting', *fact-word relationships*; (4) in 'Voice Development', knowledge of *how the human nervous system works per 1941 scientific information* (electro-dynamic colloido-quantum configurations, cortico-thalamic integration, etc.).

IN TEACHING: The principle of *non-identity* was introduced at once through various devices for *seeing differences*. Some of these devices, (for example, asking students at the first class meeting to introduce themselves to the group, summarize their educational backgrounds and comment on their special interests) might appear as ordinary procedure. However, they were aimed at a result other than any of those commonly associated with their practice. Whether the device was a short written statement by each member of the class, presented orally, of what he 'thought' he wanted to get from the course, or an assignment of the 'same' piece of work to be given by each student, it was used to make the class more aware of differences in order that every student might get training in delaying his reactions, and a *neurological* tool to deal with confusions and blockages that he had not realized came from habits of seeing only

¹ General semantics, as formulated by Alfred Korzybski and presented in his seminars. For the terms and formulations of general semantics in this paper, see *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Co., 1941).

similarities and making over generalizations. This work, called technically *indexing* in general semantics, continued throughout the courses. Many students came to recognize how their failures with problems began with a disregard of 'seeing' the differences involved.

Second, *order* was introduced. Order was explained as exemplified by 'betweenness'; it was explained that it begins 'inside the skin' as an ordering of reactions to physico-chemical stimuli, and has to do with the relation of the organism-as-a-whole-to-the-environment and with the co-ordination of 'thalamic' levels with 'cortical' levels in evaluation. It was stressed that some understanding of one's self was fundamental in relation to whatever work was at hand, and clues to such understanding were supplied from the neurological data synthesized by general semantics rather than by 'psychological' interpretations.

A 'feeling' for order and its many implications was developed in several ways. The time factor in radio, that is, holding an announcement to thirty seconds, completing a dramatic scene 'on the nose' (exactly the time allotted for it), or 'stretching' a sequence that failed to cover the assigned time, provided an obvious point through which order could be related to the 'time clocks' within each student. And a sense of timing provides one kind of order. A different set of relations in the voice development class, namely, the placing of certain exercises in certain sequences, directed the class to a consideration of orders of many other kinds. They discovered, however, that whatever kind of order they pursued, whether it concerned itself with a presentation of a play-reading, the arranging of a note-book, or their own 'steam' (thalamic) and 'steering-gear' (cortical) processes, order became something connected with relations and that the keener their awareness of relations became, the more satisfactory order would result.

Function was introduced through a series of work-plans. After three of these were made by each student, one dealing with a single assignment, another with a week's related assignments, and a third with a tentative three-weeks' program, these work-plans were combined to act as a map-guide for the student until the midterm (the end of the first ten weeks). Then they were evaluated to check their predictability. Attention to *dating* assignments and records was stressed to develop *process* orientations. The notion of function was further developed by considering each particular course in relation to other courses, daily schedules, outside activities, personal habits, etc.

The last four of the twenty weeks were used to get something of a grasp of *structure* and proper evaluations. These had significance for the student when preparing term-papers and individual projects, especially in relation to formulations, types of problems selected, and use in other fields.

II

The pantomime course was chosen for a detailed treatment of general semantics applications because this course stressed the un-speakable or silent level of evaluation. Motor actions expose clearly the unconscious assumptions, as well as the unvoiced ones, of individuals. To *look* and to *see* is basic in general semantics training before 'bursting into speech'.

Work done in this course focused on the students' achieving (1) definite movements in contrast to sloppy and uncoordinated ones; (2) economical movements in contrast to habitually 'nervous' or random ones; (3) telling movements which convey a maximum effect with a minimum of effort, in contrast to listless and weak, or melodramatic and exaggerated ones.

The course began with exercises in close observation of movements of people in everyday life, and a sequence of assignments in the handling of imaginary 'props' in a concrete situation such as mixing a cake, shaving, telephoning, etc. Students were asked to show recall of weight, shape, size, texture of surfaces of objects and their relations to other objects, etc. The *doing* test was the intelligibility of the action to those observing it.

Later the practice of copying 'real life' actions was modified by a process called 'translation'—a selection, repetition and emphasis of action that will command audience attention. Random movements were rigorously checked.

The last part of the course was taken up with problems of characterization in particular situations or scenes. This tested the concentration, vitality, audience contact, etc., of the student.

A persistent effort was made throughout this course to improve each student's work by helping him become more extensional. This involved applying the three 'working devices' of general semantics, *indexes*, *dates*, and the use of *etcetera* when making suggestions about his problems. Let us look at a few examples of this in action.

In the fifth week of the course MW had a problem in showing rejection by movement, or of expressing what is verbally called 'No'. Her action for this movement was weak, non-committal and indecisive. She told me that it was very hard for her to act 'No' as it was very hard for her to say 'No'; in fact, she did not very often feel 'No' about anything.

It was suggested that she make a list of situations that she felt more 'No' about than others. She brought in a list of three. I asked her to date the 'No's' which she had indexed. In subsequent meetings, MW acted these 'No's' out. During this time, she discovered that she could move 'No' to more things than she had at first 'thought' possible. By midterm, her ability to show definite, ordered, economical and telling movement for 'No' was marked.

SP, a handsome boy, made his living as a commercial and men's fashions model. This work and his appearance seemed to raise a barrier between him and the other boys. After the third week of the course, he sought my advice about this situation. Some of his life history was disclosed, such as his being an only child with a mother who was separated from his father when he was a year old, etc. He wrote out, in preference to telling me, that he wanted to make his movements more masculine and asked for as much practice as possible. This was given, along with some analysis of his tendencies, and indexed, dated, etc.

He was assigned pantomimes in which he portrayed the movements of heavy work situations which are regarded as 'he-man stuff', and also precise movements such as used by a chemist at work in a laboratory. He worked with himself and he worked with the assignments. Many girls were attracted to him, but he set as his goal a general acceptance by the boys in the class. He finally won this whole-heartedly when at the

final examination he gave a very amusing satire of a movie-director. This boy soon went into movie work. Three months ago he married the daughter of a well-known film-writer, and said in a letter to me just before his marriage that the course in pantomime had been a turning point in his life.

PMcD was consumed with the glammers of the 'great actress' as a result of her success in a senior play at high school. Heavy in build and slow of movement, she was conscientious and reflective in her studies. Her work-sheets early showed she had more ability for organization than most students, although her actual stage delineations were not up to her 'theory'.

No special action was taken to influence her, but at the end of the course, having learned something about indexing, dating and the use of etcetera, she evaluated herself as one who had many 'fictional' notions and needed a more factual outlook. Her dramatic 'dreams', however, were strong and she returned for another semester to try acting. She continued to seek my counsel although she was not then in any of my classes.

At the beginning of the next term, she changed her course of study to radio and was in my radio-acting class, where she could apply more actively again the devices of general semantics. She now plans not to come back to school this fall; she already has a temporary position and is looking forward to making aviation office-work her vocation—something at which she will probably succeed. She looks and acts younger now, showing that she is more relaxed and more in touch with life and extensional values.

I am well aware that adjustments such as these examples discussed have been accomplished by many competent teachers who have had no acquaintance with general semantics. I can understand how these teachers would then question the need and value of applications of general semantics. On the basis of my experience, then, I can only point out that as an increasing number of students in my classes have apparently benefited from even a slight acquaintance with extensional orientations, I am led to believe more and more in the applicability of general semantics as a *generalized* method for better human results in educational work. In view of the problems that confront us, it seems to me that education has to find and use such a generalized method in order to deal not with book content but with living, human issues.

Some results observed from applying general semantics in the work discussed and in other courses include: (1) interest from every student to some degree; (2) a marked growth in individual integration; (3) release of greater capacities in many students; (4) a sense of vitality, creativeness, discovery, frequently remarked upon by students; (5) no 'discipline problems'; (6) a greater sense of self-reliance in coping with other college work, and in a good many cases, a definite acquisition of techniques that could be applied elsewhere; (7) excellent class adjustment and a considerable increase in individual adjustments; (8) covering the officially assigned contents of each course in a minimum time and with minimum strain on students and instructor; (9) more evident grasp by students of relating the work done and the methods used to other activities; (10) actual co-ordination of the nervous systems of several students whom other instructors had labelled 'dull', 'difficult' or 'impossible', etc.; (11) the achieving of more extensional orientations in most cases, and in some an increased

interest in scientific matters; (12) the re-ordering of various students' systems of values so they saw how they could function at *human* levels.²

² This abridgment is about one-half the length of the paper presented at the Congress. Also included was an appendix consisting of the materials listed below which unfortunately can not be printed here due to space and cost limitations. The following are on file at the Institute of General Semantics, Chicago, and may be consulted there: (1) Instructor's notes in revising the content, presentation and goals in *Voice Development* per methods of general semantics, spring 1939; (2) written statements of 'How I'd like to benefit from this course'—students' first assignments in *Dialects*, fall 1939, and *Pantomime*, spring 1940; (3) work-sheet (map-plan) for the last six-weeks of the first ten-weeks of the semester by a student in *Radio Acting*, fall 1940; (4) copies of the first pages of examinations (*Voice Development*, Midterm, 1939, *Pantomime*, Final, January 1941, *Dialects*, Midterm, spring 1941, *Radio Acting*, Final, June (1941); (5) sets of lists and questions prepared by students in formulating their final projects in *Dialects*, spring 1941; (6) copy of notes made by instructor in private conference with a student in *Voice Development*, fall 1940; (7) evaluations by students in *Pantomime*, spring 1941 with diagrams prepared for final examination; (8) copy of questions on evaluation, *Pantomime*, spring 1940; (9) copy of an excerpt from *Silence* by Edgar Lee Masters, contributed by a student for consideration of the *Pantomime* class, spring 1940, in relation to objective yet un-speakable levels.

THE APPLICATION OF GENERAL SEMANTICS TO A CASE OF STAGE-FRIGHT

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Most liberal arts colleges have a first course in speech. This course deals with the fundamental principles of speech. The aims are the development of personal proficiency and the acquisition of knowledge. In this course are usually enrolled a large heterogeneous group of students. Among the myriad of problems which they present is that of stage-fright.

Stage-fright may be defined roughly as an 'emotional upset' characterized by one or more of such manifestations as trembling of the various members of the body—limbs, arms, hands, etc.; rushing of blood to the neck, ears and face; disturbed breathing; pallor; chills and cold sweat; pounding of the pulse; etc.

Recently a case of stage-fright, in the first course in speech, came to my attention. My interest was aroused, and after observation and study, I decided to try general semantics in the treatment of this case.¹

In this paper it is my purpose to give a brief description of the effects that stage-fright had upon the platform behavior of this student, and a short summary of the method that was used to deal successfully with the difficulty.

When Bill came to my special attention he had been in the speech class about ten weeks. This class met three times a week, and each student was called upon to make a short speech at each meeting. During this ten-week period Bill had been unsuccessful in delivering even a one-minute speech. His behavior on the platform was as follows. His gaze wandered out the window, to the floor, or to the wall at the back of the room. Posture was poor, shoulders slouched, balance imperfect, weight often on heels, or on one foot. There was an excessive 'nervous' activity of the hands. Words were mumbled, voice uncertain, sometimes loud, at other times almost inaudible, and rhythm jerky.

The smooth forward flow of language was interrupted by such interjections as, 'Heck, you're terrible, Bill!' 'What makes you think you can give a speech?' 'Aw, what's the use Bill?' 'Why don't you sit down?' Often he would take his seat, but sometimes he would struggle on in his own way to a conclusion.

After Bill had been observed for a few class meetings he was called in for a personal conference. The first conference was spent in getting Bill's general background. His replies agreed with the college records, which revealed the following: Bill's educational records from elementary and high school were far from satisfactory. He had always had difficulty in making passing grades. He was admitted to college only because his Intelligence Quotient was 142, and he passed entrance requirement examinations in

¹ My own interest in general semantics dates from a seminar in 1938 and extensive reading of the fundamental work—Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

English and general knowledge with exceptionally high scores. In college up to this time his grades had been low. In the several conferences that followed, Bill told this significant story:

One day when I was in the first grade at school, I was standing in front of the class, reciting. The door opened, and in came the principal, a large Irish woman, who had seemed to dislike me from the first. When she entered the room I became a bit confused in what I was saying. She stepped up and slapped me. The pain was severe. I can still feel it. The children laughed. I felt hurt and embarrassed. My face began to feel hot, and I had all I could do to keep from crying. And ever after it seemed 'that woman' had a 'pick' on me. She never entered the room without making me the object of her disciplinary measures, much to the amusement of my fellow classmates. I began to dread to come to school. I hated her, and every time I entered the schoolroom I felt as though I wanted to fight. These feelings of confusion and antagonism grew, and whenever I stood before a group they possessed me. Every time I stand up to give a speech in speech class I feel as if I'm either going to have to fight or run. Guess that's why I can't make a speech.

The significant inferences from this story are: Bill had developed 'suspicion', 'fear', and 'hate' in relation to one individual. From this, he had built up a mass of fear and antagonism toward the situation of speaker-audience.

The problem was to rid Bill of these old hates, fears and prejudices which seemed to be at the basis of his stage-fright. The first step in the remedial procedure was to acquaint Bill with general semantics. He read and studied *Language and Speech Hygiene*, by Wendell Johnson. Several conferences were spent in discussing this monograph.

An effort was made to get Bill to understand and use the devices of indexing and dating. He was told to always remember Korzybski's statement: "The indexing device makes us realize that mankind is made up of groups of individuals consisting of Smith₁, Smith₂, Smith₃, etc.' Over and over again it was emphasized that indexing makes us aware of differences, in order that he might grasp the notion that no group is composed of a single individual, but many ever-changing individuals. He was asked to apply the device to his present speech class audience. On a piece of paper he wrote the name of each individual member of this class, and opposite each name he listed the physical characteristics and 'personality traits' of each person. Then for a period of three class meetings he noted variations in each individual's appearance and behavior. His notations and their significance were discussed. His final conclusion was that the term *audience* 'means' Individual₁, Individual₂, Individual₃, etc.

The next step was to introduce him to the dating device. By the use of this device he became aware that everything changes, and that nothing is the same from one day to the next. So he began by listing all the differences between the audience in the first grade, and the one he was facing today, years later, as a freshman in college. Following this he was asked to list all differences between himself as a first grader in 1927 and as a college freshman in 1939. We discussed his notations, and he expressed his awareness of the facts that the audience situation, and his own individuality were entirely different in 1939, from what they had been in his childhood in 1927. 'But,' I pointed out to him, 'you are reacting to your audience¹⁹³⁹ exactly as you did to your audience¹⁹²⁷. You are still hating *that woman*, who no longer exists in this situation.

You are fearing the reactions of those five- and six-year-old children, who are not present in your audience today.'

During the four-week period that this study had been going on, Bill had not been asked to give a speech in class. Now he was told that he was to be given an opportunity to show that his old reactions to an audience in 1927 were gone. He was asked to deliver a short speech in conference. This speech was satisfactory, as was the second, which he delivered at the following conference. He was then told that he would be called upon for the same speech at the next class meeting. This speech was a success. He looked his audience in the eyes, he stood straight, his voice was audible, and the old hesitancy and fright were gone. In front of this audience he had lost his old fear and antagonism. He did good work during the remainder of the course, and the next year elected a course in advanced public speaking under the head of the department. In this course he also did satisfactory work.

At the end of a year and a half, Bill was asked to withdraw from college because of his poor scholastic record in other courses. Soon afterwards he went to work as a repairman for a firm which manufactures and services small machines of intricate mechanism. It was not long before he was in demand as an instructor of repairmen, because he was adept at giving verbal instructions and explanations. His speech success is assured.

In reviewing this case of stage-fright the cause was happily uncovered. The rectification of the individual through training in two of the working devices of general semantics was a successful procedure. The boy was helped to help himself.

PART III—*Continued*

Some Neuro-Semantic and Neuro-Linguistic Factors
In the Re-Construction of Education

Section D

GENERAL SEMANTICS IN THE TEACHING OF LANGUAGE AND LITERATURE

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One great difficulty in the teaching of language, as in all educating for 1941 and the future, is to get students to make judgments for themselves about the material which is presented to them. The teacher sometimes seems to be faced with the necessity of imposing his own interpretations rather than having none made at all. It is a choice between 'dictatorial' and 'democratic' procedure. It is not desirable to formulate a theory which would evade this alternative because the matter is better solved in practice by a variable human relationship between master and learners in which it is hard to tell exactly what happens.

Nevertheless, there are many things which can be said of this relationship, some of which reveal why it often fails to function smoothly. Chief among these is the 'preconceived idea' on the part of both master and pupil. Typical 'preconceived ideas' are the following:

'Poetry is very romantic stuff.'

'Good English is flowery English.'

'Reading for pleasure is reading without effort.'

'The meaning of a word is its dictionary definition.'

'This poem is good. That poem is bad.'

The teacher trained in general semantics will point out that such notions are the result of intensional orientations and that the remedy resides in systematic extensionalization of the terms 'romantic', 'good', 'flowery', 'pleasure', 'meaning', 'definition', etc.

But even those to whom the terms *intensional* and *extensional* convey little will observe that the 'preconceived ideas', listed above, tend to set the study of language and literature apart, as something remote and difficult for the pupil. They insulate him and set up a screen between the living human being and the living expression of himself. They block his 'mind' and render it impervious and inattentive.

If it were sufficient to set these facts baldly before a class and so free it of its blockages, there would be no problem here at all, but two things at least make such an approach inadequate. First, every pupil, even the 'stupidest' will freely admit in informal conversation that it is absurd to label poetry 'romantic stuff' or to suppose that 'good' English is necessarily 'flowery', etc., but second, while admitting that this is not so, he will go on behaving *as if* it were so when he reads a poem, writes an essay, or uses a dictionary.

Of course, these separate defects can be dealt with one by one as they occur and admirable techniques have been evolved for doing so. I. A. Richards' *Practical Criticism* has shown how to dispose of false notions of poetry and to substitute attentiveness for 'preconceived ideas'. Ogden's Basic English, essentially denotative in character, reveals, by negative methods, the connotative features of non-basic. *The Meaning of*

Meaning, by both these writers, shows, among other things, how inadequate a guide Noah Webster may be.¹ But in doing this we are only lopping off the heads of the hydra one by one. Each of these techniques, admirable in itself, treats only *one* aspect of the fundamental problem of education, which is to modify for the better the pupil's evaluations, and this includes his whole nervous system, not merely his 'style' of reading or writing. Style and the man, in this sense are more intimately connected than we believe. A language course should in addition to altering the pupil's style also alter the pupil.

The rigid patterns of 'preconceived ideas', which go to make up the neurotic personality of our time, are what we have to change. The minor problem of whether a teacher shall impose his own aesthetic judgments and interpretations on his class is closely linked to the wider problem of whether he shall impose his national, political, historical, or scientific prejudices on his pupils in the teeth of an unpredictable future. We cannot in the present world crisis go on teaching *what* to 'think' in any *given* situation. We must develop a technique of teaching *how* to 'think' *in any situation at all*. We must 'define thinking' as neurological evaluation by the whole personality working in an integrated manner. A poem, an essay, a novel, or a book of history should be a microcosm within which to practice a technique which can be applied elsewhere; it should not be something set preciously apart in a world of its own.

General semantics has improved upon the conventional semantics by the fact that its approach *includes* the orientations and evaluations of the pupil as fundamental. The conventional semantics, while admitting that the 'meaning' of a word does not reside in the word itself, nevertheless shirks the responsibility of formulating a theory of neurological evaluation, or what Korzybski would call a theory of sanity. There is perhaps nothing new to be said on this subject, but it involves bringing together and relating a vast amount of separate knowledge both psycho-logical and symbolical. This has been the task of Korzybski.²

At first the psycho-logical approach of general semantics may seem less appropriate to the language classroom than the more verbal approach of Ogden and Richards. But in a private school, which is not geared in any way for the practice of professional psychotherapy, there are many varied applications of general semantics, which are of the greatest educational value since they can be adapted to the usual curriculum. The prime disadvantage at the moment is the almost complete lack of appropriate textbooks.

Apparently the only useful contribution [thus far, July, 1941] to the textbook field is Dr. Hayakawa's excellent book *Language in Action*.³ Some comment upon how

¹ See I. A. Richards, *Practical Criticism* (New York: Harcourt, Brace and Co., 1929), also C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (New York: Harcourt, Brace and Co., 1923). For a discussion of Basic English, see various works by C. K. Ogden, such as *Basic English*, *The Basic Words*, *The Basic Vocabulary*, etc. (London: Kegan Paul, Trench, Trubner and Co., 1930).

² See Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: The Science Press Printing Company, 1941).

³ S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace and Co., 1941).

this book functions in the classroom of an eastern private school is part of the purpose of this paper and it is made with all due gratitude and respect toward the author.

After two years experience with Dr. Hayakawa's book in the classroom this writer is convinced that it is not enough to work through the book at the beginning of the year and then to go on with a course in 'literature' as if nothing had happened. For the first few weeks perhaps, after the book has been read and after the habits engendered by the examples are still fresh in the memory of the class, the interest aroused by the book will last but when this has died down, the old habits and attitudes will creep back. Unfortunately, the writer did not have the new printed edition, which was issued in the spring of 1941 with exercise material at the end of most of the chapters, and so the tendency not to provide the class with sufficient examples may have been accentuated in his experience. Now that this material is available, the task of keeping examples and applications constantly before the class is made much easier. It is still essential that in planning the rest of the course the teacher should be alive to the possibilities of the new approach. This does not necessarily mean that he will have to sacrifice the 'mechanical' training or 'literary' training, or 'history of literature', to a fourth specialty called *general semantics*. On the contrary, he will have to exercise all his imagination to see to it that, whatever course he gives, the semantic implications and lessons are a part of the course. Sometimes the social background of a given period in English or American literature will furnish the example. The Clubs and Coffee Houses of eighteenth century London which afforded a social background favorable to good talk and good writing were also centers of gambling and speculation. Since much of this gambling was concerned with the arrival of ships owned by men who were anxious to cover their losses, the coffee houses, more especially Lloyds, were responsible for the origins of maritime insurance. The question of whether this sort of 'gambling' in coffee houses was a 'good thing' or a 'bad thing' may furnish a parallel to the 'Story with a Moral' at the beginning of *Language in Action*. Sometimes again the example may arise from the actual situation in which the characters in a novel may find themselves. In *War and Peace* there is the following situation:

[After the battle of Borodino the debate at Russian headquarters is about to begin, the question at issue is whether to retreat and sacrifice Moscow or whether to attempt a stand in front of Moscow.]

Only when Bennigsen had entered the hut, Kutuzov moved out of his corner and came up to the table, but sat there so that his face did not come within the light of the candles on it.

Bennigsen opened the council by the question: Whether to abandon the holy and ancient capital of Russia, or to defend it?

A prolonged silence followed. Every face was knitted, and in the stillness Kutuzov could be heard angrily coughing and clearing his throat. All eyes were fixed on him. Malasha too gazed at 'Grandad'.

She was the nearest of all to him, and saw that his face was working; he seemed to be going to cry. But that did not last long.

'*The holy and ancient capital of Russia!*' he cried suddenly, in a wrathful voice, repeating Bennigsen's words, and thereby underlining the false note in them. 'Allow me to tell your excellency that that question has no meaning to a Russian.' (He lurched his unwieldy figure forward.) 'Such a question cannot be put; there is no

sense in such a question. The question I have asked these gentlemen to meet to discuss is the question of the war. The question is: The safety of Russia lies in her army. Is it better to risk the loss of the army and of Moscow by giving battle, or to abandon Moscow without a battle? That is the question on which I desire to learn your opinion.'

It is not easy, within the limits of this paper, to give instances of the applications of general semantics to much of the literary work of the class, but in the following passage some notion can be given of how a good writer may exhibit the *process of abstracting* in a descriptive passage in such a way that his use of the orders of abstraction contributes to the validity of the narrative:

A spot for the fire was found with some difficulty, for the earth was moist, and the grass high and rank. At last there was a clicking of flint and steel, and presently there stood out from the darkness one of the tawny faces of my muleteers, bent down to near the ground, and suddenly lit up by the glowing of the spark, which he courted with careful breath. Before long there was a particle of dry fibre or leaf that kindled to a tiny flame; then another was lit from that, and then another. Then small, crisp twigs, little bigger than bodkins, were laid athwart the glowing fire. The swelling cheeks of the muleteer, laid level with the earth, blew tenderly at first, then more boldly, and the young flame was daintily nursed and fed, and fed more plentifully till it gained good strength. At last a whole armful of dry bushes was piled up over the fire, and presently, with a loud, cheery cracking and crackling, a royal tall blaze shot up from the earth, and showed me once more the shapes and faces of my men, and the dim outlines of the horses and mules that stood grazing hard by.

—William Kinglake.⁴

Here the author's success is due to his ordered enumeration of sense impressions. The illusion is firmly created for the reader by appealing to him through abstractions of a lower order. He learns what the author has to convey 'thalamically' rather than 'cortically'. A lesson in style may be quickly imparted to a class along these lines if the class has previously had some training in general semantics. If it has not had this training, the point can be made only with a great deal of explaining.

Of course, this sort of thing is done by teachers and students who are not trained in general semantics and they would probably substitute the terms *general* and *particular* for higher and lower order abstractions. The significance of the latter terms is that they stress the whole neurological and contextual process, which binds the writer to the reader and both to the world of 'fact' and do *not* rest on mere verbal interpretations of 'meaning'. The same is true of general semantics as a whole. Constantly it was found that the terminology turned out to be practical and extremely illuminating in unexpected places.

This is but one of the ways in which the writer has found it possible to extend the scope of Dr. Hayakawa's book to cover other aspects of a balanced language course. The impressive thing about general semantics is that, properly understood and applied, it supplies a broad basis from which all such evaluations can be made to grow.

The textbook from which the above passage of Kinglake was taken is J. C. Dent's *Thought in English Prose*. It was found that by re-formulating the questionnaires at the end of the passages in this book so that they conformed to the terminology of gen-

⁴From *Thought in English Prose* by J. C. Dent (New York: Odyssey Press, 1930).

eral semantics, a rough working method could be established which would continue the principles laid down by Hayakawa and carry them into the 'literary' field.

The chief concrete advantages of these methods were that an entirely new orientation infected the class. The pupils began to approach writing and reading in terms of process, function, evaluation of terms, etc., instead of in terms of 'meaning' and definition. The class seldom had to be reprimanded for anything save inattentive or insufficiently sensitive reading. This last was due to the difficulty of cultivating the new habits to their fullest possible extent. Whenever the class tended to lapse into the old habits of reading or writing, inattention resulted. Whenever the work was related to general semantics, it evoked interest. For this reason the writer would like to stress again the need of a textbook which inculcates the habits of general semantics by a very large body of exercise material. It is easy to 'get to the point' of the discipline but far harder to apply it habitually or automatically.

It has already been mentioned that some of the techniques of the conventional semantics have high value in the classroom. This is especially true of the Basic English methods. A colleague of the writer has had outstanding results with pupils whom he has seen privately and with whom he has been able to combine general semantics and Basic.* Another technique which could also be profitably incorporated with general semantics is the French method of *explication de textes*. It is essentially extensional in its methods and has the great advantage that it can be made progressively more extensional as the pupils' interests and knowledge widen. The writer feels however, that it is important that such methods should be subordinate to the framework of general semantics because the latter is the only organized system in which extensional methods can be employed *ad infinitum* and in all fields of endeavor.

From the point of view of the secondary school and perhaps also of the freshman level in college there is one other aspect of general semantics which should, in the writer's opinion, receive special attention in the future—that is, its ethical aspect. The notion that this system is designed as a clever way of 'debunking' accepted standards is a very superficial one, yet it has an unfortunate appeal for a certain type of student and needs to be constantly guarded against by the teacher. These ethics should be clearly formulated and it is with pleasure that this writer notes that Dr. Hayakawa has presented a paper on this subject during this Congress.

Finally it is important that more teachers should have some sort of training in general semantics, regardless of what field they are working in. The great outcry of teachers in other fields than that of language is that their pupils experience difficulty in expressing themselves. If the training of physicists, chemists, historians, biologists, mathematicians, etc., also included some training in general semantics it would be much easier for language departments to co-operate with them. In addition, the linguists would not so often be called upon to sacrifice the 'literary' side of their teaching to its more mechanical drill aspects since the discipline of general semantics can very easily be made to embrace these without neglecting aesthetic and literary values.

* See Alfred Korzybski, *op. cit.*, p. 763, Ch. III, note 1, for Korzybski's evaluations on this subject.—Editor.

THE USE OF GENERAL SEMANTICS IN TEACHING THE
LANGUAGE SKILLS
IN THE EIGHTH GRADE, 1936-1938 AT THE BARSTOW SCHOOL

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Like many English teachers in high schools and junior colleges I have found that the attempt to improve my students' language skills constitutes the heaviest burden of my teaching. The language problem has been given a great deal of attention in recent years; hundreds of texts have been produced which are intended to teach the student to read, to write and to 'think'. Most of these books when analyzed prove to be mere re-formulations of 'idcas' which have been recorded many times before. The method of each is substantially the same, that of objurgation, or telling the student what to do without giving him a general method and a system for doing it or an insight into the causes of his difficulties. General semantics had been reported as effectively increasing the general 'intellectual' efficiency of groups of students¹ and it seemed apparent that it could be applied in the particular field of language operations to replace the purely verbal, hortatory methods which prevail in most schools. In 1936 at the Barstow School for girls in Kansas City, Missouri, I set out to use this discipline for a direct attack upon the various language difficulties which I found in my classes. This paper presents a brief account of the methods and procedures that I used and the results I observed, and also some objective test data for the second group of students who were exposed to this training.²

My first step was to make each student conscious in a very specific way of her own particular difficulties. This analytical approach seems to be diametrically opposed to

¹See *General Semantics*. Papers from the First American Congress for General Semantics, March, 1935. (New York: Arrow Editions, 1938). This volume contains early papers on the subject.

²The use of general semantics by the writer in teaching eighth-grade language skills was part of an over-all re-orientation of the educational program at the Barstow School originated and directed by M. Kendig, Head and Educational Director of the school, 1934-38. This paper was written in the autumn of 1938 in co-operation with Miss Kendig, as a brief article on specific applications of general semantics methodology and the observed results on one grade level. Some other aspects of the work done under this educational program are discussed in the following, all of which are available in reprint form (see publication list of the Institute of General Semantics, Chicago): M. Kendig, 'Language Re-Orientation of High School Curriculum and Scientific Control of Neuro-Linguistic Mechanisms for Better Mental Health and Scholastic Achievement.' Presented before Educational Section, A.A.A.S., St. Louis, December, 1935. Published in *General Semantics*, New York: Arrow Editions, 1938 (Lithoprinted, 6 pp.); 'This Living Barstow: Implications of Linguistic Revision for School Learning and Personality Adjustment.' Address given at Kansas City, April, 1937 (Printed, 13 pp.); 'Comments on the Controversy over the Nature and Constancy of the I.Q. as a Measure of Potential Growth,' *Educational Method*, January, 1940 (Printed, 2 pp.); M. Kendig and D. W. Brown, 'Elective English Language Unit for the High School, 1936' (Mimeographed, 9 pp.); Sarah Michic, 'A New General Language Curriculum for the Eighth Grade,' *Modern Language Journal*, February, 1938 (Printed, 5 pp.).

the sort of 'animal learning' inherent in current educational practice. Children of twelve to fifteen have a latent ability for self-criticism and we went on the assumption that this faculty should be developed specifically as they are maturing. Before any training in general semantics was introduced, significant misunderstandings of both oral and written material and many examples of failure to communicate adequately were brought to the attention of the class, and I kept a record of them for future reference. During this time the subject matter of the course centered around the study, theoretical and historical, of language as a human function. The students were carefully introduced to the nature of symbolism and were taught to understand that language functions as a form of representation.

I first touched on Korzybski's system by demonstrating the analogy he makes between maps and language symbols in relation to territory-facts. In the science-mathematics classes the students were constructing, at this time, a clay relief map of Europe and the Near East. Since the map was used to demonstrate the geographical factors determining racial and linguistic distribution, the danger of misrepresenting territory-facts became concretely apparent. The girls began to see that 'what they really knew' (or 'meant') was of small consequence if they could not communicate it adequately through structurally correct forms of representation. The very obvious fact that the most detailed as well as structurally similar map is the most reliable guide to a territory showed them the pitfalls of loose, general terminology, which roughly includes 'everything' and gives little clue to what they know.

Most of the application of the Korzybskian system was made in connection with the *structural differential*. I planned it this way for two reasons: (1) The differential had been in front of the class for some time and had aroused a good deal of interest. (2) It is a device around which so much of the material of general semantics may be organized. In explaining it I was able to introduce the students to the notion of the process character of 'matter', to drill them in the realization that the object of sense-perception is not the event, nor the word the object, to bring home to them an understanding of the projection mechanisms of the human nervous system and their dangers, and to discuss the need for a structurally correct representation of the world. An understanding of these points was necessary before any direct application to the language material could be made.

Although reading and writing difficulties seem to represent similar semantic blockages, I made a practice of approaching the two problems separately, when explaining them by means of the differential. For problems in expression, work with the lower orders of abstraction on the differential and discussion of *multiordinal* terms were most valuable. Handling the loose strings on the differential increased the students' consciousness of characteristics left out when we represent experience, a point already learned from the map project. At this time I explained and prescribed the use of indexes, dates, and the etc., and the value of always remembering them while writing and speaking. These extensional devices helped to direct the girls' attention to things they might have left out through 'carelessness' and to eliminate the vagueness and confusion of expression which comes from lack of consciousness of (1) abstracting and projecting, (2) the absolute individuality of events and their relatedness, (3) the ab-

stract nature of our vocabulary and (4) the false-to-fact orientations (subject-predicate forms, etc.) we get from the structure of language itself.

The differential used in conjunction with concrete experiences is the most effective device I have ever found in dealing with the prevention and correction of reading difficulties (the failure to comprehend verbal material). With the aid of the differential I was able to demonstrate that in reading as in other types of learning we are attempting to make the acquaintance of the world outside our skins by means of symbolic representation of this world. I showed the students that when they are reading a book or taking oral directions, the expressions of the writer or speaker become events or unalterable empirical data in the outer world which must be transferred to their own nervous systems with structural accuracy. (They must reconstruct the facts represented by the words.) By means of a diagram I demonstrated the insuperable blockage which the habit of unconscious projection of uncontrolled verbal association tends to set up between themselves and the reading material. This experience helped the students develop a feeling of the need of integrity in their own representations of the outer world. Lack of this feeling appears to be at the root of most reading difficulties, especially those of the more elusive type, not always detected by reading examinations, but very troublesome to the student and puzzling to most teachers.

I noticed particularly that this new orientation greatly increased the students' ability to grasp 'larger meanings'. For example, it tended to clear up certain persistent types of errors they had previously made in attempting to grasp the general import of a paragraph or any other long unit of writing. The consciousness of the fact that we omit characteristics in every act of representation put them on their guard against an overinclusive, too general interpretation of the material indicating inattention to important limiting or extensional details. On the other hand, the training tended to reduce the frequency of too narrow interpretations, especially the inclination to literal reading of any group of words that strikes the attention, instead of seeing them as a part of an 'ordered and inter-related whole'; for example, the training tended to eliminate the 'that's what it says here' type of answer.

By the end of the year I found that all my students' work had improved remarkably in several definite respects. After old themes had been revised, in the light of their new understanding of how language works, I found that their writing was more lucid and adequately organized. The general weaknesses that come from using words without 'thinking' of the 'meaning' they carry (or, more exactly, visualizing the facts represented)—including poor paragraph construction, faulty logical transitions, contradictory statements and repetitions—were understood much more readily and quickly corrected. On form B of the Nelson-Denny Reading Test, given in May, the average improvement over the scores on form A, given in September, was twice the normal expectancy. (Both forms were scored and reported by the Educational Records Bureau.)

In class work I noticed an interest in more exact interpretation of words, especially 'contextual meanings', an increased ability to understand sentences of more complex structure, and an improved comprehension of the objectives of a given lesson or textbook assignment. In sum, such rudimentary training in general semantics as my groups of students had in these two years, so much improved their ability and

confidence in using the language, that most of them were able by the end of their year in the eighth grade to perform academic tasks beyond those usually prescribed for children of their age.

Also significant are the comparative percentile ratings for one group of eighth grade girls on the American Council Psychological Examination, forms for 1935 and 1936. These tests were administered in September, 1937 and May, 1938. Epidemic conditions in Kansas City in September interfered with testing all the girls in the group. Only eight girls in my class were present during the 'test weeks' in both September and May. The tests were scored by the Educational Records Bureau, which reported the comparative percentile ranks given below. These percentiles are based on the scores of over 1500 ninth grade students in *Independent Schools*, members of the Bureau. As no other member schools administered these American Council Psychological tests to eighth grade students, the Bureau had no norms for this grade and our students were compared with ninth grade students in other schools.

	September, 1937 Percentile Rank Total Score	May, 1938 Percentile Rank Total Score	Points Gained in Comparative Percentile Rank
Student 1	27	53	26
Student 2	37	78	41
Student 3	18	60	42
Student 4	64	90	26
Student 5	6	31	25
Student 6	10	67	57
Student 7	73	94	21
Student 8	6	72	66

Average gain for this group in comparative percentile rank—38.

I believe that it is particularly significant that not only the 'poor' students showed phenomenal gains but also the students in the upper percentiles gained considerably in relative standing in a group of 1500 more advanced students.

DISCUSSION GROUP IN GENERAL SEMANTICS FOR NINTH-GRADE
GIRLS IN THE UNIVERSITY OF CHICAGO HIGH SCHOOL:
PRELIMINARY REPORT

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(ABSTRACT)

In an attempt to develop an effective group method for dealing with the personal problems that might well fall within the province of the school guidance officer, the author undertook a discussion group program designed to acquaint ninth-grade girls in the University of Chicago High School with some general understanding of the factors contributing to 'happy' and 'unhappy' adjustments and to train them in the use of some of the more simple working principles and practical devices of general semantics. The extensional devices (i.e. the use of indexes, dates, and the 'etc.' which Korzybski calls the 'working devices' of general semantics) were emphasized in close relation to the day-to-day adjustment problems of the forty-three girls who participated. There were nineteen group meetings, each fifty minutes long. Practical 'assignments' involving use of the above mentioned devices were supplemented by discussions centering around such issues and topics as the structure and functioning of the nervous system, 'cortico-thalamic' integration, undelayed and delayed reactions, 'emotional' maturity, over-verbalizing, escape mechanisms, neuro-linguistic mechanisms of evaluation, map-territory and word-fact relating, etc.

The girls showed, in reports regarding specific situations, that they had been able to apply the principles learned in group discussions, in understanding and controlling their own individual adjustments. The expressed and observed behavioral and verbal reactions of the girls, supplemented by teachers' reports, indicated that the program was generally effective in bringing about more adequate adjustment on the part of the girls. The program will be continued and expanded to include other grade groups.

A detailed report of the project as expanded during 1941-42 is scheduled for publication in the *Journal* of the National Association of Deans of Women, October, 1942.

EVALUATION OF THE APPLICATION OF GENERAL SEMANTICS METHODOLOGY IN A 'READING READINESS' PROGRAM

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*Men are very similar at birth; it is afterwards the great
differences arise.*—CONFUCIUS

Present trends seem to indicate that one of the most crucial problems confronting education today is the problem of teaching children how to read. Criticisms of present practices have come both from within and without our school systems. In 1936 President Hutchins of the University of Chicago made this startling statement: 'It is a gross but suggestive exaggeration to say that we do not know how to teach the three R's or what to teach beyond them.'¹ More recently, Mortimer Adler has written a book containing a chapter entitled 'The Defeat of the Schools,' in which he makes a 'grave indictment' of our system of education because of the failure to teach the art of reading for understanding.² But the criticisms are coming not only from the upper levels. After Gates had made an exhaustive study of reading in the New York city schools, he came to the following conclusion:

I think we have evidence that half or more of our pupils never really read in the first three grades. They may translate it much as you and I translate passages from a foreign language, but they rarely read a passage at first trial.³

These criticisms are coming at a time when reading is probably receiving more attention than any other subject in the curriculum. The literature in the field is voluminous—an ever-increasing list of books, experimental studies, investigations, reports, and articles on every phase of the subject. Over a hundred standardized tests are available for measuring progress at almost any level. Reading conferences are held every year in some of our universities to throw a search light on present objectives and practices. And yet the number of reading failures and reading 'problem cases' in our schools is appalling. All this activity seems to have produced what Henry James calls 'the constant force that makes for muddlement,' for we do not find much agreement as to the fundamental 'causes' for these failures or the best procedures for preventing them.

Perhaps the greatest obstacle to the solution of the problem is the survival of many 'habits of thought' that are inconsistent with the advance of knowledge in the physical and biological sciences. Reading is still generally regarded as a single function at a time (1941) when scientists are emphasizing the fact that the child 'is a functional dynamic unity which cannot be broken up into segments susceptible of en-

¹ Robert Maynard Hutchins, *No Friendly Voice* (Chicago: University of Chicago Press, 1936), p. 120.

² Mortimer J. Adler, *How to Read a Book* (New York: Simon and Schuster, 1940), pp. 65-100.

³ Arthur I. Gates, 'Research Problems in Reading in the Elementary School,' *Needed Research in Elementary School Reading*, Fourth Annual Research Bulletin, The National Conference on Research in Elementary School English (February, 1936), 36-40.

tirely different considerations';⁴ that learning of any type involves the whole organism; that the important unit of study is the whole child; and that environmental forces are in themselves an integral part of the process of development of the whole child.

If we accept the point of view of the modern sciences, any educational theory must attempt to take into account all the known factors that enter into the development of the organism-as-a-whole-in-the-environment. We must think of the child not in terms of reading, or spelling, or arithmetic, but in terms of his nervous system. It is the function of the nervous system to integrate the organism and its adaptative responses as-a-whole-in-its-environments; many specialists have made this clear.*

Although this principle is usually accepted in science, it is seldom explicitly reflected in educational theory and practice. Fortunately, this point of view is receiving more and more attention from specialists in the fields of psychology, physiology, neurology, pathology, and mental hygiene.⁵ They are stressing the harmonious development of the immature organism; and they maintain that when the organism is 'ready,' the child will learn to read naturally and effectively, providing organism-as-a-whole methods are used. According to this theory, reading itself must be considered from the organismal point of view; that is, it must be regarded as an 'evolving whole' and should not be broken up into specific aspects to be mastered in certain grades.

Because of the growing emphasis on the development of the organism-as-a-whole, administrators, supervisors, and teachers are beginning to focus their attention on the mental hygiene implications of the methods of instruction that are being used in teaching reading in the initial stages. Out of this situation has arisen a new notion in education known as 'reading readiness'. According to Harrison this notion is based on the assumption that 'a *very specific state of preparedness*'⁶ is necessary for carrying on the types of activity involved in the reading process.

Although there is considerable uncertainty regarding some of the factors that are instrumental in bringing about this 'state of preparedness', it is generally agreed that variations in development are dependent to a large extent upon the early environments provided. Since the home is the place where the child spends the years of greatest impressionability, it is the most important early environmental influence. But unfortunately, the average home of today does not provide the background of varied experiences that is necessary to develop the child's capacities. A large number of children who enter our schools come from 'barren' environments. They have been

⁴ Daniel A. Prescott, *Emotion and the Educative Process* (Washington: American Council on Education, 1938), p. 197.

* However, before Korzybski, the explicit inclusion of the environment has been neglected methodologically, and so has tended to be ignored in fact if not in theory.—*Editor*.

⁵ Frank S. Freeman, 'The Challenge of the Individual Child,' *National Elementary Principal, Nineteenth Yearbook*, XIX (July, 1940); Ada Hart Harlitt, *Psychology of Infancy and Early Childhood* (New York: McGraw-Hill Book Co., 1930); John Jacob Morgan, *Child Psychology* (New York: Farrar & Rinehart, 1935); Samuel T. Orton, 'The Neurological Basis of Elementary Education,' *Archives of Neurology and Psychiatry*, XXI (March, 1929), 641-46; W. Carson Ryan, *Mental Health through Education* (New York: The Commonwealth Fund, 1938); Paul A. Witty and Charles E. Skinner, Editors, *Mental Hygiene in Modern Education* (New York: Farrar & Rinehart, 1939).

⁶ M. Lucile Harrison, 'Readiness for the Thinking Side of Reading,' *Childhood Education*, XV (January, 1939), 219.

deprived of a 'normal' life of exploration and investigation. They have had restricted opportunities for play, for visiting interesting places, and for participating in purposeful activities.

Children who have not had opportunities for expansion quite often make low scores on 'intelligence' and 'readiness' tests. Many homes do not provide opportunities for even the simplest patterns of performance called for in these tests which are so heavily weighted on the side of language and supposedly typical experiences as to often invalidate their usefulness. It is impossible to know what such children are really able to do until optimum conditions for development are provided. Freeman's study of foster children shows that a favorable environment tends to raise the I.Q.'s of under-developed children.⁷ It should follow, then, that the immature child must be placed in a 'stimulating' environment and supplied with the most efficient neurological training for general adjustment if he is to make a success of learning to read.

II

The importance of this type of adjustment is emphasized by Korzybski in his remarkable book on general semantics and is the basis of the extensional method which he advocates for the neuro-linguistic and neuro-semantic training necessary to bring about the harmonious development of the human organism.⁸ In his explication of how the methodology brings about the integration of the nervous system, etc., Korzybski calls attention to a fundamental distinction between the functions of the areas of the central nervous system, which are known as the 'thalamus' and the 'cortex'. Schematically speaking, the 'thalamus' is that part of the brain that is directly connected with the outside world through 'senses', 'emotions', etc. It may be considered the center of 'affective reactivity' while the 'cortex' functions essentially as the medium of higher differentiation, etc.; the cortical area also involves the linguistic centers, etc. The 'cortex' is not directly connected with the outside world and impulses to reach it must first pass through the 'thalamus'. The two must work together in the proper order to bring about the functional integration of the nervous system and 'emotional' balance.⁹ We should be aware of this distinction because of the 'thalamic contribution' in the impulses relayed to the 'cortex'.

A great many other modern writers have emphasized this close functional relationship.¹⁰ Some of our educators are beginning to recognize its importance in training the

⁷ F. N. Freeman, K. J. Holzinger, B. C. Mitchell, et al., *The Influence of Environment on the Intelligence, School Achievement, and Conduct of Foster Children, Twenty-Seventh Yearbook of the National Society for the Study of Education* (Bloomington, Illinois: Public School Publishing Co., 1928), Part I, pp. 102-219.

⁸ Alfred Korzybski, *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Lancaster, Penn.: Science Press Printing Co., 1933).

⁹ Alfred Korzybski, *op. cit.*, and for a short treatment 'Extensionalization in Mathematics, Mathematical Physics and General Education,' Paper II, 'Thalamic Symbolism and Mathematics.' Presented before the American Mathematical Society, American Association for the Advancement of Science, 1938 (Chicago: Institute of General Semantics, 1939, mimeographed).

¹⁰ W. Russell Brain and E. B. Strauss, *Recent Advances in Neurology* (Philadelphia: P. Blakiston's Son & Co., 1929); J. F. Fulton, *Physiology of the Nervous System* (New York: Oxford University Press, 1938); Charles Judson Herrick, *Brains of Rats and Men*

child to use his nervous system most efficiently. Korzybski also stresses the fact that children's reactions are strongly 'emotional' or 'thalamic' in character. Only those 'ideas' that can be related to their own direct sense perceptions can be easily grasped. And so the young child's nervous system is unable to evaluate the symbol systems known as language, the highest levels of abstractions made by the human nervous system. With the techniques that are used at present in teaching beginning reading we are 'exposing many immature children to symbolic stimuli which they are not prepared to evaluate.'¹¹ Where there is too rapid or too complex stimulation of this type, 'mental' and 'emotional' disturbances occur which interfere with the child's adjusting himself properly either to the school situation or to the reading program.

Not only do we force immature children to begin reading before they are neuro-semantically ready, but we violate the natural order of functioning of the nervous system when we teach young children definitions, abstractions, and general principles before they have had first-hand experience with the 'realities' (facts) from which these abstractions are made.* The extensional method developed by Korzybski¹² is in accordance with the structure-function of the nervous system for it follows the order in which our nervous systems were developed; 'senses' first and 'mind' next. When we use the extensional method, verbal symbolism follows direct experience of facts, and symbols then have life-value content (or 'meaning').

It is becoming more and more evident that a great many first-grade children should have this extensionalizing type of training in order to bring about 'emotional stability', environmental adjustment, etc. Since we must take into account the mechanisms involved in the learning process when we use this method, we do not give reading materials to children that presuppose a broader background of direct experience than they possess. On the other hand, we provide them with experiences and materials which they can evaluate and in which they find 'meaning'.¹³ We do not expect children to be ready to read, but we get them ready for the semantic reactions that reading calls for.

III

An experiment with a curriculum designed to develop immature children and to prepare them for reading activities was undertaken by the writer at the Reilly School

(Chicago: University of Chicago Press, 1926); C. W. Kappers, Carl G. Huber, and Elizabeth C. Crosby, *The Comparative Anatomy of the Nervous System of Vertebrates, Including Man* (New York: The Macmillan Co., 1939); Albert Kuntz, *Neuro-Anatomy* (Philadelphia: Lea & Febiger, 1936); James W. Papez, *Comparative Neurology* (New York: Thomas Y. Crowell Co., 1929); Henri Piéron, *Thought and the Brain* (New York: Harcourt, Brace and Co., 1927).

¹¹ Douglas G. Campbell, 'Neuro-Linguistic and Neuro-Semantic Factors of Child Development,' *General Semantics: Papers from the First American Congress for General Semantics*, collected and arranged by Hansel Baugh (New York: Arrow Editions, 1938), p. 104; also *Journal de Psychiatrie Infantile*, VIII, No. 2 (Switzerland, 1941).

* On this subject very pertinent observations have been made by James M. Plant, M.D., which are well summarized in his article 'The Psychiatrist Looks at Today's School Child,' *Educational Record*, XXIII, Supplement No. 15 (January, 1942), 69-71.—*Editor*

¹² Alfred Korzybski, 'Neuro-Semantic and Neuro-Linguistic Mechanisms of Extensionalization. General Semantics as a Natural Experimental Science,' *American Journal of Psychiatry*, XCIII (July, 1936); also see index, *Science and Sanity*, *op. cit.*

¹³ Harold M. Skeels, *A Study of Environmental Stimulation* (Iowa City, Iowa: University of Iowa, 1938).

in Chicago. This program was developed with a group of children who had been classified by the adjustment teacher as 'probably or definitely not ready to read'. This classification was made after the children had been given the Kuhlman Anderson Intelligence Test and the Metropolitan Readiness Tests. A careful study of performance on these tests was supplemented by a study of the child's probable readiness in terms of health, and physical and social maturity. Environmental and personality factors were also taken into consideration.

An analysis of the case histories revealed that many of the factors which prevent children from having the experiences necessary for their optimum development were exhibited in this group: economic insecurity of the home; foreign language spoken in the home; inadequate facilities for speech development; barren experiential background; insufficient opportunities for social development; few book or story opportunities.

These differences in background, interests, and 'emotional' and 'mental' make-up are important factors that differentiate one child from another. They are also the factors that must be taken into account in determining 'readiness' for any learning activity. In order to take care of the special needs of the children in this group, a new-type program was developed which was based on the following considerations:

1. The program should take into consideration the nature and function of the organism-as-a-whole-in-the-environment.
2. Each child should be regarded as a distinct personality and his development should be guided along the lines of his own capacities and growth potentialities.
3. Opportunities should be provided for the child to do what he is organismally able to do at that date. He should engage in purposeful activities without overstimulation, strain, or undue frustration.
4. The selection, organization, and administration of the materials used should be made in terms of their contribution to the integration of the nervous system and the proper functioning of the neuro-semantic and neuro-linguistic mechanisms.
5. The extensional methods and techniques of general semantics should be used as direct means to bring about a new type of adjustment based on neurological grounds.

Many of the activities carried on in this program were similar to those found in 'readiness' programs in our more progressive schools and will not be discussed here. The unique feature of this experiment was the direct application of extensional principles and the simple extensional training recommended by Korzybski to advance the adjustment and integration of the child. The new methods also involved the psychosomatic factors which are necessary to help the integrating and balancing mechanisms of the nervous system.

In addition to environmental adjustment and personality development, the program was designed to lead the child from the pre-reading stage to the reading stage naturally and easily. The application of the extensional method made this possible, for it developed the type of maturity in relation to the environment that is necessary before a child can interpret written or printed symbols. It also provided *that body of direct concrete experience* which should precede learning that is based on a symbol system.

The extensional activities were organized around centers of interest that were

related to the immediate environment and interests of these young children. Since children are attracted, first of all to objects that are alive and to moving objects, the first center of interest introduced was *Our Pets*. This was followed by *The Ways We Go From Place to Place* since few things seem more fascinating to our modern children than ways of traveling. Other centers of interest were also introduced, such as *Our Home*, *What We Wear*, *People We See*, etc. The neuro-linguistic and neuro-semantic training was definite and systematic and proceeded according to certain well-defined steps that were necessary to help the child make proper evaluations. Whenever objects, pictures, and other materials were introduced, they were related to experiences in the child's environment, and were suitable to his age and maturity.

In the procedures used to introduce symbolization, an important principle of general semantics was followed; namely, 'facts' should come first, and labels (or words) next. This is the natural order established in the evolution of the human race and of language. 'Facts' came first, and language was invented to represent the 'facts'. It is also the order in which the child first becomes familiar with language. He uses objects before he finds out the names for them. The touchable, usable thing is far more important to him than the label for it. For this reason, the child must have first-hand experiences before he is introduced to verbalizations about them.

The first step, therefore, was to introduce the 'object' (*dog*, *car*, etc.) whenever possible. The children were given an opportunity to have various types of experiences with the object, to observe it carefully and to describe it—form, size, color, and other outstanding characteristics. They were always encouraged to interpret their own first-hand observations. A number of different objects of the same 'class' (other *dogs*, *cars*, etc.) were then introduced and similarities and differences noted. At first they explored large objects and learned the significance of some of the grosser differences. Gradually they were able to observe smaller differences and finer details.

A great many pictures were used to supplement actual experience with objects, activities, etc. They also served as further extensions of the environment. These pictures were very carefully selected as to form, color, relative size, and accuracy of representation. In introducing this non-verbal form of representation the first pictures selected showed only the object under discussion unless they were used for story purposes. If the picture was that of a *dog*, it showed this dog, and nothing else. It was necessary to proceed in this manner in order to develop visual memory and visual differentiation. At this stage visual discrimination might be upset by too complex a picture.

The children then made their own selections of pictures of dogs to cut out and paste on a large sheet of paper. When completed, this sheet formed one page of a large pre-reading book which was developed for each child as the program advanced. These activities combined visual, tactile, and kinaesthetic experiences. Next, they pasted the word *dog* (printed on a slip of paper) under each picture. The purpose of this activity was to establish an association between the 'object', or the picture of the 'object', and the symbol used for the 'object'. There was no intention of teaching word recognition at this time.

They were now ready to paste the numbers 1, 2, 3, etc., under the pictures and words in order to set the dogs off, one from another. This is another important step

in developing proper evaluation, for it makes the child aware of the fact that dog₁ is different from dog₂, dog₃, and all the other dogs in his experience.* It also prevents him from 'thinking' in terms of only one dog. As a result, proper word-fact relations are established, and his language becomes similar in structure to the facts of his world in which every object is different from every other object. Through this type of neuro-semantic experience the child learned unconsciously that 'the use of a word comes first, and the meaning is to be distilled out of it by observation and analysis.'¹⁴

These activities and devices are very simple, but it is their simplicity that makes them so powerful in building up habits of proper evaluation. They also have important implications in the education of young children. If we orient them in terms of a single 'object', i.e. *one* dog, or *one* car, or *one* boy, or *one* elephant, as is done in many of our pre-primers and primers, we are training them to be unconscious of differences; that is, in intensional orientation by definition, etc., and so in identification. But if we orient them in terms of *many* dogs, or *many* cars, etc., we are training them to be conscious of *both similarities and differences*, i.e. in non-identity and extensional orientations. This consciousness of differences stimulates the 'cortex', introducing functional delay in reactions and so neurological integration, 'emotional' balance, more adequate evaluations, adjustment, etc. This type of orientation also prepares children for reading because the 'symbols in their language, like the cells of a living organism, grow by extending their functional range.'¹⁵

While the children were building up the notions of 'dog', 'cat', 'bird', etc., through these various activities and experiences, they were constantly making inferences based on their observations: dogs are of different colors, sizes, shapes; dogs have different kinds of heads, ears, noses, legs, tails; dogs bark, but all dogs do not bark in the same way; dogs are used for different purposes; dogs are classified as animals; *some* dogs 'are' pets; *some* dogs 'are' our friends, etc. All of these inferences were based on actual first-hand experience, observation, and discrimination.

This extensional training had proceeded according to Korzybski's formulation of the natural order of evaluation, which is also the natural order for the functioning of the nervous system: the *object* was observed first; *description* of the object followed; then the *label* (or word) for the object; then *descriptions* of other 'objects' in the same 'class' followed by an analysis of similarities and differences; and last, *inferences* from the descriptions. The children had also learned how to make a simple type of generalization because they were being trained in an extensional type of 'thinking' (evaluation). They were also being oriented by facts and not by verbalism. Every word introduced had many life values for them and came to be a symbol of something—not merely a meaningless 'noise'. They had also learned correct-to-fact symbolism, and were not in danger, like Pavlov's dog, of identifying the symbol with the thing symbolized. In fact, later developments showed that these children were much better

* The use of indexes is one of the five extensional devices of general semantics, useful in training in non-identity, etc. Words emphasize the similarities of 'objects', situations, relations, etc.; the indexes keep us conscious of the differences, preventing identification of individuals and levels of abstractions.—*Editor*.

¹⁴ Bertrand Russell, *The Analysis of Mind* (New York: Macmillan Co., 1921), p. 197.

¹⁵ Committee on the Function of English in General Education of the P.E.A. Commission on Secondary School Curriculum, *Language in General Education* (New York: D. Appleton-Century Co., 1940), p. 29.

prepared for the reading situation than the 'brighter' pupils who were introduced to reading without this extensionalizing training.

Since words and 'ideas' are most easily acquired in connection with new experiences and new objects, the various centers of interest afforded rich opportunities for growth in language power. This development was one of the major aims of the experiment, for the child's ability to use language is one of the most reliable indications of his 'readiness' for reading. Particular effort was made to encourage individuality in the use of language by providing conversational situations instead of formal language drills. The new and varied experiences and training in habits of keen observation, tended to inspire spontaneous conversation. The neuro-semantic training provided the experiences that make the use of language similar in structure to 'reality'.

Projects and correlated handwork were also a natural outcome of the type of program provided. Trips to interesting places in the neighborhood—parks, shops, markets, and show rooms—stimulated the children to carry out projects of their own. The manipulative and play activities helped to develop the child's muscular coordination and control, and his 'mental' powers were stimulated and developed as he helped to plan and carry out the details of the project. He also learned how to function as a member of a group. If these children had been working with the 'superior' group, they would not have had as many opportunities for such growth, since the management and execution of many of these tasks would have been taken over by the 'brighter' pupils.

After the program had been in operation about ten weeks, the regular reading work of the grade was started with this group. At this time the children were re-tested. It was expected that the I.Q.'s would change, for all of these children were of 'good potentiality' and would naturally benefit when they were given the advantages of a stimulating environment under intelligent direction. It was not expected, however, that there would be such marked changes as the new scores revealed. The I.Q.'s advanced from eleven to sixteen points, and the mental ages of all of the children were now in advance of their chronological ages. Such astonishing changes as the following took place in the raw scores on the readiness tests: from thirty-three to seventy-eight; from fifty to eighty-two; from sixty to eighty-four; and from fifty-eight to one hundred and two. The increased scores on these tests showed the marked effects of the training in extensional methods, and seemed to indicate that the first test results were not a reliable picture of the child's 'native' ability.¹⁶

IV

The experiment has been repeated with five other groups of children over a period of three years. Each time the size of the group has been increased in order to give more of our immature children an opportunity to make satisfactory internal and external adjustments to school situations. We are now convinced that a great many, if not all of our first-grade children should have this extensionalizing type of training before they are introduced to the formal work in reading.

The results have continued to be very gratifying. The re-testing usually shows

¹⁶ O. C. Held, 'Constancy-of-the-I.Q. Controversy,' *School and Society*, L (December, 1939), 805-6.

remarkable changes in the I.Q.'s. But since the unit of study in this experiment is the whole child-in-the-environment, we are not particularly concerned with I.Q.'s or mental ages as indices of ability. The following changes are considered by far the most significant although they are not based on any test data:

There is considerable evidence that the direct neurological training described here brings about better organism-environment relations, since the children tend to make 'normal', happy adjustments to school conditions. Evidence of frustration, tension, and nervousness disappear and 'emotional' balance and 'emotional' adjustment become more and more evident. The children become happy and relaxed, and work calmly and spontaneously, completely absorbed in what they are doing. There seems to be no limit to the time and effort they are willing to put into the various activities.

With the introduction of stimulating and rich materials, the children develop a keen interest in the things around them. The interest and attention 'span' increases. There is improvement in auditory and visual discrimination as they learn to observe more details, more subtle features, and to perceive both similarities *and* differences. Many of them make rapid gains in skill and resourcefulness in manipulating materials.

Satisfactory adjustments are also made by the children who present serious personality and behavior problems. The apprehensive child becomes more self-confident, and the socially maladjusted child becomes a more co-operative member of the group. The timid child becomes more self-reliant and independent, and the nervous and high-tensioned child, more calm and composed.

The general semantics training is an effective aid in promoting 'readiness' for reading, for it provides the types of experiences which must precede learning that is organized around a symbol system. Symbols come to have rich contents of associations, feeling tone, etc., and proper evaluations of word-fact relations are established. Through these procedures the children build up a background of experience and training which enables them to put 'meaning' into printed symbols as well as get 'meaning' out of them. They can do this because they have been given an opportunity to grow in many directions under the conditions best suited to stimulate their development. They have also learned to 'think' and act in terms of a symbolic language which correctly represents the 'realities' in their environments. The use of *general semantics* methods with immature children has brought about better individual orientation and growth, and a happier adjustment to school life and work.

PART IV
Some Non-Aristotelian Considerations



SOME NON-ARISTOTELIAN DATA ON EFFICIENCY FOR HUMAN ADJUSTMENT

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The summary of Graicunas' work given at the end of this supplement, in a practically unchanged form, was a personal communication in 1934 from Walter N. Polakov, the outstanding engineer and industrial diagnostician in the United States. It was originally written for the Tennessee Valley Authority, which was then passing through acute managerial difficulties due to confusion of function and control. Mr. Polakov, writing about the T.V.A. project, evaluated the situation thus:

The youthful T.V.A. inherited the language and metaphysics of a bygone age. It encounters unprecedented difficulties in expressing new relations in terms of vanished fancies. The night fear of ghosts remains. . . . The difficulties in building the T.V.A. without a language having correspondence to reality, are not difficulties peculiar to this project. They are signs of our time—a sort of dangerous epidemic, springing out of our slow adjustment to a profoundly changed environment.

In my work with students I have utilized Mr. Polakov's summary with his diagram adapted from the original data concerning the 'span of attention' or 'span of control', as well as related foundations formulated in my own writings.¹ I have found empirically that these are invariably useful for the elimination of the individual's inability to handle *personal* life situations adequately.

At the root of the problem lies the significant fundamental difference in the *rate of growth* between arithmetical progression, which grows by addition, for example, 2,4,6,8,10, etc., and geometrical progression, which grows by multiplication, for example, 2,4,8,16,32, etc.

We must mention here permutations and combinations, and even combinations of higher order which also follow an exponential law. The different orders in which things can be arranged are called their *permutations*. The different collections which can be formed from things without regard to the order in which they are placed are called their *combinations*. For example, the four letters, *a, e, m, n* can form but one combination, but they occur in the English language in several permutations, as *name, amen, mean, mane*. The question may arise, 'How many changes can be rung with 10 bells, taking 7 at a time?' The answer is 604,800, quite a respectable number for a problem so seemingly simple on the surface.

The work of Graicunas, Urwick, etc., is based on empirical data from military and managerial experiences, where combinations *dealing with human reactions* grow in a geometrical ratio. The disregard of the above considerations has led to many military and managerial disasters. I must stress that *the same principles apply also to our*

¹ See in particular my *Manhood of Humanity: The Science and Art of Human Engineering* (New York: E. P. Dutton and Co., 1921), pp. 15-26, 63, 90-92, 112 ff., 126 ff., 134 ff., 161, 167 ff., 176 ff., 193 ff., 217 f., 232 ff., 245 ff., 255 ff.; and *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Second edition; Lancaster, Penn.: Science Press Printing Co., 1941), pp. 161, 264, 354, Chap. xxxiii. *Science and Sanity* will be referred to as *S & S*.

personal life difficulties. For instance, in what psychiatrists call 'family attachment' (infantile clinging to 'papa' or 'mama'), in the notorious interference of mothers-in-law, or in the tragedies of marital triangles, it is not a question of just an 'added' factor, but the difficulties accumulate in some geometrical ratio. Similarly, a childless couple 'adds' a baby to the family, and the complications grow following some exponential law. Organismal responses to 'one more glass of whiskey' are certainly not additive. The followers of sick Schicklgruber-Hitler may have learned by now that the 'addition' of one more country introduces non-additive complexities not included in a naïve fool's paradise gained by brute force. And so it goes all through life in the more fundamental relationships.

If in personal life we undertake or have to carry too many responsibilities, interests, involvements, etc., the complexities often grow beyond the capacity of *one* human brain to manage them adequately, and human tragedies, disorganizations, etc., follow, very often culminating in maladjustment and even neurosis or psychosis.

Many times a single painful event in childhood or even later in life distorts the attitudes and colors the whole life. Thus, the 'addition' of a single factor results in unnecessary complexities which are certainly not additive, but spread all through life in some geometrical ratio.²

We hear remarks by some scientists that 'It is impossible to express the conduct of a whole animal as the algebraic sum of the reflexes of its isolated segments.' Yet later we find that same author saying, 'The individual represents heredity *plus* environment.' Another writes, 'Thus a clock-work is as little the mere *sum* of its little wheels as a human being is the *sum* of his cells and molecules'; and later on, 'to be exact the ego consists of the engrams of all our experiences *plus* the actual psychism.' These two examples, out of many, are given to show how even with those scientists who realize the fallacy of additivity, some 'plus' creeps in, which is obviously false to facts, demonstrating that ingrained additive tendency inherent in the aristotelian prescientific orientation.³

On the other hand, a few modern psychiatrists familiar with the latest scientific developments by necessity realize those additive aberrations, and do not plant a falsifying 'plus'. We read, therefore: 'Before therapy can be discussed or put into practice, three fundamental concepts must be thoroughly understood: (1) the nature and characteristics of neurotic symptoms; (2) the formula, "Constitution *times* Environment *times* Stress"; and (3) the role that "attitudes" play in the creation of symptoms.'⁴ Although Dr. Kraines has definitely a non-additive attitude, his 'times' does not represent the situation correctly. The correct representation would be functional, $N = f(x_1, x_2, x_3, \dots, x_n)$, where N represents neurosis, f represents function of, x_1 , constitution, x_2 , environment, x_3 , stress, and the *etc.* ($\dots x_n$) indicates special functional factors in a given case, all of which are interrelated. Such psychotherapeutic observations indicate why in a 'therapy of *attitudes*' it is so important to change from an aristotelian to a general non-aristotelian attitude, not only for psychiatry, but for prevention of mis-evaluations in life by everyone.⁵

² *S & S*, p. xxiii ff.

³ *S & S*, p. 605 ff.

⁴ S. H. Kraines, 'Brief Psychotherapy,' *Mental Hygiene* XXVII (Jan., 1943), 70-79.

⁵ *S & S*, pp. xx-xxii.

As a matter of fact, most psychotherapy depends on efforts of the physician to eliminate, through reinterpretation in treatment, some of those original factors which produced worries, fears, anxieties, and other disorganizations. These factors were responsible for the introduction, because of exponential laws, of an enormous number of artificial complexities which made life adjustment difficult or impossible. In my personal experience and the experience of many of my students, who are physicians, educators, etc., it is found that the explanation of the above non-aristotelian principles is very useful, as the patients or students realize that with the old attitudes they are up against impossibilities. They become conscious of the mechanisms of the difficulties, which is the only way to make a solution possible.

Mathematicians, in their often deliberate detachment from life, unfortunately have not forewarned us of these kinds of methodological traps, and in fact often repulse their students by the lifelessness of their teachings. Mathematicians quite glibly speak about their students being 'mathematical imbeciles'. Often I wonder whether this is true, or whether the responsibility has to be laid frankly on the mathematicians, who may be 'life imbeciles'. If before they begin to teach they would study in a 'mental' hospital and analyze the 'treatises' of the patients, they would become better teachers, better research workers, as they would understand what it means to be detached from living life.

The problem of additivity in life as well as in mathematics, where it is called 'linearity', is of great antiquity because it was the *simplest*. The mathematical formulation of additivity (linearity) is $f(x + y) = f(x) + f(y)$. One of the most striking consequences of additivity is the predictability from the characteristics of the elements to those of the results. In other words, no characteristic absent in the elements appears in the result. It is obvious that when we combine elements, and the results have *new* characteristics absent in the original elements, the new problems are structurally no more of an additive character, and the synthesis must be different.⁶ If our attitudes are *limited* to the additive principle *alone* the results in the most fundamental issues of science and life are bound to be false to facts. For example, one pound *plus* one pound in weight results in two pounds, but one gallon of water 'added' to one gallon of alcohol results in less than two gallons of liquid because profound inter-molecular issues enter which are not additive, and so $1 + 1 \neq 2$. Similarly, one atom of mercury 'minus' one electron becomes one atom of gold. And so the results are not predictable by the principle of additivity. As Graicunas shows, the 'addition' of a sixth assistant by a supervisor may add 20 percent to his human resources, but adds approximately 100 percent to the complexity and difficulty of his task of co-ordination. And so it goes.

We have discovered by modern science that the world and life are not additive in their fundamental aspects. Even the epoch-making work of Einstein, the founder of a non-newtonian system, depends on the transformation of linear (additive) equations into non-linear (non-additive) more complicated equations.⁷ But the structure of our ordinary subject-predicate language and corresponding attitudes is still aristotelian, and therefore in the main additive. Unfortunately extremely few of us, even among my readers and students, realize that fundamental gap between additive and non-additive relations and attitudes.

⁶ S & S, Chap. xxxiii.

⁷ S & S, p. 612 ff.

My whole life work, and particularly since 1921, has been based on the *life implications* of this neglect to differentiate between the laws of growth of arithmetical and of geometrical progressions. Such neglect was partially responsible for most historical spasms of civilization such as wars and revolutions, and accounts for many disasters in private lives. This point must be stressed to the utmost. Because Graicunas, Urwick, etc., deal with *human relations* without disregarding mathematical issues, their work is based on the same principles, which automatically involve permutations and combinations. The interested reader is urged to consult his elementary algebra about the arithmetical and geometrical rates of growth, and the simple formulations of permutation and combination. It is sad to say that combinations of higher order are usually omitted in the textbooks and regarded as mathematical curiosities without application. Unfortunately life facts and complications, ultimately on the electronic and electro-colloidal levels, in principle follow these combinations of higher order. The computations as such are of little or no practical value; however, the methodological implications for life orientation, disregarded by mathematicians, are of primary importance. For further details the reader is referred to Jevons' and my own work.⁸

In human life one of our difficulties is that we are 'both the marble and the sculptor', as Carrel says, and so we are both the managed and the manager of our personal lives, the supervised and the supervisor, the co-ordinated and the co-ordinator. Perhaps one of the main sources of a great many maladjustments is exactly that self-reflexiveness and circularity which we do not know how to manage simply because we don't know that there are non-aristotelian methods to do so.⁹

In such a brief paper it is impossible to go into details short of writing a book. Plenty of books on modern science are available, but they have only very limited applications because the issues had not been formulated methodologically. It is generally not realized that with the advance of science the old aristotelian methodology, by which the majority of us still live, is thoroughly obsolete and unworkable today, and even harmful for the best of human adjustment.

This 'epilogue' was written to emphasize and partially explain the necessity of passing from the aristotelian orientation to a non-aristotelian, functional orientation, and to stress to what extent the issues have application in daily life. This non-aristotelian system is based frankly on physico-mathematical methods, which, as this volume shows, have general human application, even on the level of nursery education. These are not problems for speculation or verbal arguments or debates; the issues are empirical and have to be tested by application. This paper is based on experience of how this non-aristotelian system *works* in practice, no matter whether the theoretical issues are formulated satisfactorily for everyone, or satisfy the author himself.

In the present unprecedented world crisis we are not facing a 'new order', we are witnessing the death-bed agonies of the inevitable dying of the old aristotelian system which has been applied to its deadly limit. I personally have no doubt that after this world crisis is over, and the dead are buried, the future of mankind will depend on

⁸ W. Stanley Jevons, *The Principles of Science* (London: Macmillan and Co., Ltd., 1920), Chap. ix. S & S, p. 340.

⁹ Alfred Korzybski, 'General Semantics, Psychiatry, Psychotherapy and Prevention,' *Amer. Jour. of Psychiatry* XCVIII (Sept., 1941), 205-207. See particularly the unabridged paper (Institute of General Semantics, 1940), pp. 8-10; also S & S, p. 58 and Chap. xxvii.

some new non-aristotelian systems which would be frankly based on scientific extensional principles, and so ultimately on physico-mathematical methods. I emphasize that the title of my book 'Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics,' indicates that science and sanity are interrelated, which seems only natural. The reader should notice that I utilize 'non-aristotelian systems' in the plural, because the non-aristotelian system I have produced is not *the* system, but *a* system among many other possible ones.

Surveying the chain of historical world tragedies as they accumulate with accelerating acceleration and intensity, one naturally looks for the factors which are responsible for such cataclysms. This problem may be analyzed in many different ways, but here in this first non-aristotelian system we take frankly and explicitly an engineering point of view, in which there is no 'philosophy' for 'philosophy's' sake, nor science for science's sake, nor mathematics for mathematics' sake, but we consider all those activities as products of the human nervous system, to be *applied* for its optimum efficiency. When formulated methodologically, the interrelation between science and sanity becomes obvious, and the new child-like methods can be applied for more efficient management of our private as well as public lives, and in particular for *prevention* of maladjustments, i.e. mis-evaluations in life.

From this, perhaps a new point of view, we must squarely put the responsibility on 'philosophers', because of their innocence of science, their 'superiority', aloofness from non-aristotelian issues, and so their *inability* to take into serious consideration our *neuro-semantic* and *neuro-linguistic environment as environment*. The 'philosophers' somehow feel 'above' experimental methods; they will argue endlessly on the verbal level, but they will not experiment with the new extensional methods. I must repeat that the new methods are not a problem for arguments or debates, but simply for empirical investigation of how they work. 'Philosophers' should have discovered long ago that maximum teachability is found in *method*, and in our case ultimately physico-mathematical method, even on the nursery level. Through their errors of omission, 'philosophers' are largely responsible for the sterility of education, be it on the primary or the university level, and for the naïve 'isolationists' in science, and/or in life. For example, it is pathetic to watch university faculty members at meetings, where many have nothing in common, because they are not united by a general method. Under such conditions the effectiveness of scientists as human beings is lowered and often does not even command the respect of the layman, who does not realize the handicaps of specialization without a general method. In my experience with classes we have students who belong to widely separated fields such as medicine, mathematical physics, education, social work, linguistics, law, etc., and in a few days they become a more and more closely knit unit because they get a *general method* which applies to all their professions, as well as daily life. The present day isolationism paralyzes the isolationists themselves, preventing them from taking a general extensional attitude. We must become and remain conscious that scientific work as well as our private reactions in life are the end product of the electro-colloidal processes going on in our nervous system. As experience shows, these processes are deeply affected, in different ways, depending on whether we use intensional or extensional *methods*. This correspondence and close interrelationship between neurological processes and the *method* used is the key problem

in passing from one system to another, in this case from an aristotelian to a non-aristotelian system. The empirical demonstration of the above facts through actual application of the extensional method is, I believe, entirely new, and amounts to a 'therapy of attitudes'.

Is the blame to be put entirely on the shoulders of scientists or laymen? The answer is 'no'. With the old, aristotelian, two-valued orientation it is humanly impossible to have the modern, infinite-valued, non-aristotelian process orientation, and therefore it is impossible to 'think' about ourselves in electro-colloidal neurological terms. So once again the responsibility is the 'philosophers', who have neglected this most important *neuro-methodological* field, and so have not given educators, scientists, etc., and laymen a foundation for mutual co-operation. This reflection is rather heavy in consequences, because the failure of 'philosophers', which is a matter of historical record, has actually prevented the co-ordination of diverse efforts for optimum human adjustment. 'Philosophers' of course will try to talk their way out of this dilemma, but this will not help because this work has not been done by them, and the only way for them is to investigate, *experiment*, and find out. A great many 'philosophers' will be shocked and consider sacrilegious a mere suggestion that 'philosophy' should become experimental, like any scientific theory is.

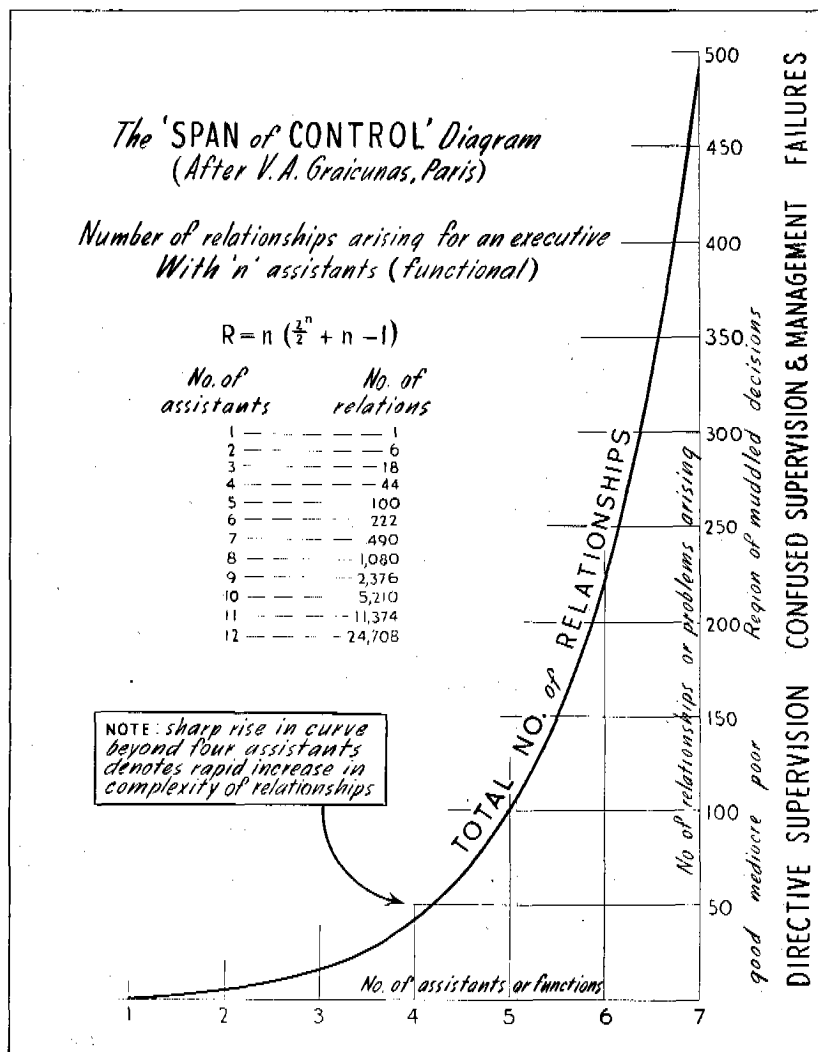
As to politicians, diplomats, rulers, etc., the situation seems hopeless because of their ignorance, lack of preparation for their human responsibilities, and in fact refusal to accept professional guidance when help is offered them. I will not go into details, as many hundreds of volumes have been written exhibiting the utter stupidity and incompetence of those who are supposed to guide our destinies, with the result that we are bled white in blood as well as in taxes, becoming more and more disorganized for years to come.

In the history of science and civilization we discover that living emergencies forced us to find some solutions to make adjustment to life more efficient, in spite of 'philosophers'. So far it has been done by men like Graicunas, Urwick, Polakov, etc., who based their work on the application of mathematical methods to empirical data about the limitations of what the human nervous system can stand. Their work dealt particularly with industrial and military fields, where lack of efficiency brings obvious disasters. In my own work I felt that mathematical methods should have broader applications, and apply to daily life, as even the smallest managerial unit, which we call the 'family', also must have some method for optimum human efficiency based on the understanding of human nature and the limitations of what one human brain can stand. Otherwise disasters, in different degrees, are bound to follow, which may even end in maladjustment, neurosis, or psychosis.

I admit that I can not see how anyone who has to deal with human affairs, be he the responsible member of a family, a teacher, a physician, or a politician, etc., can be competent at all to deal with the problems confronting him if he is entirely innocent of the problems raised in this paper, including the summary by Polakov taken from the work of Graicunas and Urwick, which follows. Original sources were published abroad in 1933. In 1937 the Institute of Public Administration, Columbia University, New York, reprinted the two fundamental papers referred to, with some new material, under the title *Papers on the Science of Administration*, edited by Luther Gulick and L. Urwick. I suggest that all my readers study this book.

SUMMARY OF SPAN OF ATTENTION BY WALTER N. POLAKOV

For a full exposition of Mr. V. A. Graicunas' theory, see *Bulletin of International Management Institute*, Vol. VII, No. 3, March, 1933, article entitled: 'Relationship in Organization.' Reference to this theory is also made in a paper read to the Department



of Industrial Cooperation of the British Association for the Advancement of Science, Leicester, September 7, 1933, by Major L. Urwick, O.B.E., M.C., M.A., entitled: 'Organization as a Technical Problem.' Quoting from the last reference:

Students of administration have long recognized that, in practice, no human brain should attempt to supervise directly more than five, or at the most, six other individuals whose work is interrelated. Mr. V. A. Graicunas of Paris has recently shown why this is so. [His work is the second of the contributions of importance to the technique of organization since 1930.] An individual who is coordinating the work of others whose duties interconnect must take into account in his decisions, not only the reactions of each person concerned as an individual, but also his reactions as a member of any possible grouping of persons which may arise during the course of the work.

The psychological conception of 'the span of attention' places strict limits on the number of separate factors which the human mind can grasp simultaneously. It has its administrative counterpart in what may be described as '*the span of control*'. A supervisor with five subordinates reporting directly to him, who adds a sixth, increases his available human resources by 20 percent. But he adds approximately 100 percent to the complexity and difficulty of his task of co-ordination. The number of relationships which he must consider increases not by arithmetical but by geometrical progression. . . . Neglect of the limitations imposed by 'the span of control' creates insoluble problems in co-ordination.

The proposed formula for the number of direct group relationships is:

$$R = n \left(\frac{2^n}{2} + n - 1 \right)$$

where $R = a + b + c$ represents total direct and cross relationships; n = number of persons supervised; a = number of direct single relationships; b = number of cross relationships; c = number of direct group relationships. Thus computed on the *maximum* basis direct and cross relationships arising for the given number of subordinates is:

Number of assistants or functions	Number of relationships or problems arising
1	1 (1)*
2	6 (4)
3	18 (10)
4	44 (21)
5	100 (41)
6	222 (78)
7	490 (148)
8	1080 (283)
9	2376 (547)
10	5210 (1068)
11	11374 (2102)
12	24708 (4161)

* Figures in parentheses are computed on the *minimum* basis.

THE CONTRIBUTORS



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These short biographical sketches have been written for the most part from data which contributors were requested to supply in detail. Some responded at the time of the Congress, others to our second request in the autumn of 1942; some in detail, others in barest outline. When possible these data have been supplemented with information known to me personally, or taken from the files of the Institute or the leading biographical directories, Who's Who in America, Men of Science (1938), American Scholars, etc. Pressure of time made it impossible to submit the sketches to each of the seventy-four authors for approval before sending the volume to press, and I must take responsibility, in so far as I had the data, for any errors of omission or commission which have escaped our attention in spite of the utmost care. The only abbreviations which need explanation are the letters IGS for Institute of General Semantics, Chicago, used in indicating the seminar courses attended by some of the contributors.—Editor.

Forrest Nelson Anderson, M.D., received his bachelor's and medical degrees from the University of Kansas where he continued as an instructor in the departments of bacteriology and neuropsychiatry. During 1924-1925, he served as assistant surgeon with the U. S. Public Health Service. He was Commonwealth fellow for three years at the University of Pennsylvania, and received the degree of Doctor of Medical Science from this university in 1930. From 1929 until he went on active duty as major in the medical corps of the U.S. Army in June, 1942, Doctor Anderson was executive director of the Child Guidance Clinic of Los Angeles and Pasadena. In addition to his work at the clinic, Doctor Anderson is a special lecturer on mental hygiene with the extension division of the University of California, and assistant professor of pediatrics at the College of Medical Evangelists. In 1935, he served as psychiatrist with a special survey investigating mental hygiene conditions among Indian 'problem children' in Oklahoma. He was a member of the June intensive seminar at the IGS, 1940. Doctor Anderson is the author of numerous articles in medical and social-work journals on problems dealing with psychiatry and child guidance, and is a member of the Amer. Medical Assoc.; Amer. Psychiatric Assoc.; Amer. Orthopsychiatric Assoc.; Los Angeles Soc. of Neurology and Psychiatry; and the Philadelphia Neurological Soc.

Thomas Anthony Angland, M.D., did some of his premedical work at the University of

Montana, received the B.S. degree from the University of Minnesota in 1932, followed by the bachelor's and doctor's degrees in medicine from the same institution. Before September, 1942, when he entered the U. S. Army as lieutenant in the medical corps, he was in the general practice of medicine and surgery at Yakima, Washington. He spent a post-graduate year in the study of orthopedic surgery at the University of Iowa and is especially interested in the problems of traumatic surgery. He is a member of the Amer. Medical Assoc., Washington state and Yakima medical societies. He attended the August intensive seminar, IGS, 1939, and has reported to the Institute many interesting examples of applications to psychosomatic problems in his practice.

Magda Blondiau Arnold was born and educated in Germany and held business positions in Czechoslovakia. After she came to Canada she attended the University of Toronto where she received the B.A., 1939, M.A., 1940, and Ph.D., 1942, degrees in experimental psychology. She has been an interne at the Mental Hospital, Hamilton, Ontario, and is now instructor in psychology at the University of Toronto and consultant psychologist in vocational guidance and clinical work for the Toronto Y.W.C.A. She attended the first holiday intensive seminar, IGS, 1938, and since has been interested in experimental investigations of tension along the lines suggested by Korzybski's formulations. The title of her doctoral dissertation is 'Emotional Factors in Experi-

mental Neurosis'; see editor's note, her paper in this volume. She is a member of the Canadian Psychological Assoc.; Amer. Psychological Assoc.; and Ontario Vocational Guidance Assoc.

Louis Gagnon Barrett graduated in 1924 from the Harvard University Dental School (reorganized 1941 as Harvard School of Dental Medicine), where he is now special lecturer in general semantics and dentistry in addition to his research in the electro-conductivity of oral-fluids and practice of general dentistry at Hanover, New Hampshire. As an undergraduate he was awarded the Lowell Medal for Research and has been graduate assistant in oral surgery at Massachusetts General Hospital, Boston, and senior dental intern at St. Mary's Hospital, Brooklyn, New York. His non-professional interests have centered in radio (he has contributed many articles to the *Wireless Age Magazine*); handicrafts such as bookbinding; and various art forms, especially the dance; he was at one time associated with Ruth St. Denis. He has attended two intensive seminars, IGS, 1939 and 1941, but his study and application of general semantics began soon after the publication of *Science and Sanity*. He has studied personally with Korzybski and was a member of groups at Harvard for whom Korzybski conducted seminars. His articles have appeared in *Nutrition and Dental Health*, *Jour. of the Amer. Dental Assoc.*, *Harvard Dental Record*, *The Dental Cosmos*, *Dental Items of Interest*, *Bulletins of the New Hampshire State Board of Health*, and the 1941 volume of *Dental Caries*. Two of these articles dealing especially with problems of evaluation in dental practice have been reprinted by the IGS and are available on their publication list.

Ora Ray Bontrager was born in Pennsylvania, and comes of the English stock who settled that state in pre-revolutionary days, but he went west for his education, receiving the bachelor's, master's and doctoral degrees from the State University of Iowa. He specialized in mathematics as an undergraduate and in education and psychology in his work for the Ph.D. Prior to returning to Pennsylvania as director of the reading clinic and assistant director of teacher training in the State Teachers College at California, he was

successively superintendent of schools in the towns of Solon and Lone Tree, Iowa; instructor in education, Cornell College, Iowa; and associate professor of education, Illinois State Normal University and principal of the Illinois Soldiers' and Sailors' Children's Home. He is a member of the honorary educational fraternities, *Phi Delta Kappa* and *Kappa Delta Pi*; Nat. Educational Assoc.; Nat. Soc. for the Study of Education; the A.A.A.S.; the A.A.U.P. Doctor Bontrager has attended several of Korzybski's seminars, IGS, June, 1939, August, 1940, and Penn State, August, 1941. Among his writings are *Research Studies in Language*, Vol. I (Iowa City: Extension Division, University of Iowa, 1939) and *Reading in Action: An Application of General Semantics to the Improvement of Reading Processes*, which, announced in the second edition of *Science and Sanity* as 'in preparation', is at present, 1942, being used in experimental mimeographed form in his classes at Penn State Teachers College.

Alvin Priestly Bradford was born and educated in Texas. He received the B.A. from the University of San Antonio and the M.A. from the University of Texas in 1941, where he was instructor in philosophy and doing graduate work in philosophy, sociology and education relative to his principal interest in mental hygiene and social psychology until he joined the U.S. Army. He is now a sergeant and instructor in the Administrative School, Medical Replacement Training Center, Camp Robinson, Arkansas. During the course of his education he had experience in journalism and business which led to his first interest in problems of adjustment. He is a member of *Alpha Kappa Delta*, national honorary sociological fraternity, and member of the Amer. Philosophical Assoc., Southwestern Division. He is the author of 'An Approach to the Philosophy of Adjustment,' his master's thesis, and 'A Philosophy of Adjustment in Reference to Social Changes,' read at the Southwest Philosophical Conference, December, 1940. He writes that during his spare time at Camp Robinson he is working on a text in the field of social-psychology from the semantical point of view, and studying the publications of Dr. Edmund Montgomery (a contemporary of C. S. Peirce) for the

purpose of writing on Montgomery's notions of 'vital-organization' as background material for what Mr. Bradford calls 'the semantical revolution'.

Eugene Fred Briggs was born in Maine where he now resides and practices dentistry. He graduated from the University of Maryland where he received the D.D.S. degree in 1903. He is a fellow of the Amer. College of Dentistry and member of the Amer. Dental Assoc. His observations and collection of data on the interrelation of emotional disturbances and dental health cover a period of many years and his first article on the subject appeared in the *Oral Hygiene Magazine* for August, 1934, under the title 'Our Emotions'; followed by 'The Psychologic Factor in Dental Caries,' *Oral Hygiene* (March, 1936); 'Mental Unrest and Dental Caries,' *Nutrition and Dental Health* (April, 1938); 'Emotions as the Controlling Factor in Dental Caries,' *Harvard Dental Record* (October 31, 1938).

Dona Worral Brown was born in Connecticut and graduated *cum laude* from Smith College in 1931, specializing in English and mathematics. She has a master's degree from the University of Michigan in English language and literature, supplemented by a year in Scotland where she studied linguistics under Professor Bruce Dickinson at the University of Edinburgh. While in Britain she met her future husband, Wallace Brown (B. Litt. Oxon., Ph.D. Michigan), then Rhodes Scholar from Idaho. When the University of Kansas City was founded, Doctor Brown joined the English department, of which he is now chairman, and this made it possible for the Barstow School to secure Mrs. Brown as a member of the staff. Here she first developed the unique program of individual remediation in language which was a fundamental procedure in the scholastic and guidance re-orientation of the school according to the principles of general semantics which M. Kendig inaugurated at the school in 1934. Later, in addition to the eighth grade work described in her paper, Mrs. Brown introduced an elective unit in English language (historical backgrounds and general principles of language, including general semantics) for juniors and seniors, designed to answer the need for additional

pre-college training in use of the English language and improvement of general linguistic orientations. At that time it was the first course of its kind to be accepted as an entrance unit by such College Entrance Board colleges as Vassar, Smith and Wellesley. During 1936 and 1937 Mrs. Brown further developed general techniques for language remediation and, in special College Board training classes, procedures for increasing those linguistic-semantic skills required for success in college, so well tested by the Scholastic Aptitude Examinations of the College Board. As a result of this training, girls ordinarily considered non-college material made satisfactory scores on these tests, and have successfully completed their college courses. Mrs. Brown was a member of Korzybski's seminar at the Barstow School in the autumn of 1935, had much personal instruction from him, and worked closely with the director in carrying out the school program on general semantics principles.

Spencer Franklin Brown was born in Illinois and graduated from Shurtleff College in 1933, having specialized in English. At the State University of Iowa he received the M.A. degree in speech and speech pathology, 1935, and the Ph.D. in psychology and speech pathology, 1937. He has long been a student of general semantics, first with Professor Johnson at Iowa and then at the August and December intensive seminars, IGS, 1939 and August intensive, IGS, 1940. In 1935-36 he was at the University of Maine as instructor in public speaking; and in 1937-38 assistant in speech, Ohio State University; and for the summer, instructor in speech at Western State Teachers' College, Michigan. In 1938 he was appointed instructor in speech at the University of Minnesota and is now a candidate for the M.D. degree in the medical school of this university. In 1941, he married Frances Manson, who did her undergraduate work at the University of Minnesota in speech correction and attended two of the same seminars at the IGS. Doctor Brown is the author of many articles on research in stuttering and other speech defects which have been published in the *Quar. Jour. of Speech*, *Jour. of Speech Disorders*, *Jour. of Abnormal and Social Psychology*, and in *Speech Monographs*. He is a member of *Sigma Xi*; Amer.

Speech Correction Assoc.; Amer. Psychological Assoc.; Nat. Assoc. of Teachers of Speech.

W. Burridge, D.M., M.A. (Oxon.), is professor of physiology at Lucknow University, India, dean of the medical faculty and principal of King George's Medical College. He is one of the honorary trustees of the Institute of General Semantics and is the author of four books of particular importance to students of general semantics because of his electro-colloidal outlook and formulations: *Excitability, A Cardiac Study* (Oxford, 1932); *A New Physiology of Sensation* (Oxford, 1932); *A New Physiological Psychology* (Arnold, 1933); and *Alcohol and Anaesthesia* (Williams & Norgate, 1934). His many articles beginning in 1910 will be found in the following English and other foreign journals: *Jour. of Physiology*, *Quarterly Jour. of Med.*, *Quarterly Jour. of Experimental Physiology*, *Proceedings of the Physiological Soc.*, *Archives of Internationale de Pharmacologie et de Therapie*, *Jour. of Mental Science*, *Indian Jour. of Psychology*, etc. His paper in this volume was first presented as the annual oration at the meeting of the British Medical Association, provincial branch, India, 1939. A few words in the preface to *A New Physiological Psychology* characterize Doctor Burridge and his approach: 'I have avoided direct reference to the work of others because I so generally disagree with their theories. But when noting this point, the reader should also note that the disagreement is always based on new facts unknown to these others. . . . This very excellent [orthodox synapse] theory automatically acts as a barrier to an understanding of how the nervous system really works.'

Hildreth Caldwell, M.D., is a specialist in obstetrics and gynecology and counselor in family relations. She received her bachelor's and medical degrees from the University of California at Berkeley in 1920 and 1924, spent two years at the London School of Tropical Medicine, and then went to India where she was director of the Presbyterian Hospital. On her return to this country in 1931 she spent a year in graduate study at Johns Hopkins Hospital. For the past ten years she has been in practice at Los Angeles

and has been particularly interested in developing group methods with her patients in preparing them for marriage, child care and family relations, etc. In private life she is Mrs. Beaumont Caldwell and lists her avocations as 'cooperating with my husband, guiding my daughter, gardening, and playing badminton'. She attended the Korzybski course of lectures at Los Angeles in 1939, and the IGS seminar conducted there in 1942, and has been active in organizing informal group meetings with other professional students in the city. She is a member of the regional medical associations and of the Soc. for General Semantics.

Douglas Gordon Campbell, M.D., was born in Canada and graduated from the University of Toronto with the M.B. degree in 1925. In 1931 he received the M.R.C.P. from the Royal College of Physicians, London, and in 1932 the M.D. from Toronto. After his internship at Henry Ford Hospital, 1925-1926, he was assistant physician, Ontario Provincial Hospital, 1926-1927, and research psychiatrist, Institute of Juvenile Research, Chicago, 1927-1929. The next two years were devoted to graduate studies in London and in Vienna where he worked in various hospitals, and with Alfred Adler, Gordon Holmes, etc. From 1931 to 1938 he was at the University of Chicago where he was assistant clinical professor of psychiatry, psychiatrist of the student health service and attending physician, Cook County Psychopathic Hospital. During 1938-1939, Doctor Campbell was in New York for a year of graduate studies in neuropsychiatry, psychoanalysis, etc. In the summers of 1939 and 1940 he was director of the Mills College education workshop, 'Neuropsychiatry for Teachers'. In 1940 he married Professor Marian Van Tuyl of Mills College, author of a paper in this volume. At San Francisco he has a private practice and is consulting psychiatrist at Mills College in addition to his work as clinical professor of psychiatry, University of California Medical School, and lecturer in social welfare at the University. At present he is principally engaged in a neuropsychiatric research project for the National Research Council, Washington, D.C., on the subject of post-traumatic states. He is a diplomate, Amer. Board of Psychiatry and Neurology; a member of the

Alpha Omega Alpha (honorary medical fraternity); the Amer. Psychiatric Assoc.; the Amer. Orthopsychiatric Assoc.; the Northern California Soc. for Neurology and Psychiatry; and the state and county medical societies. He is the author of 'Posture: A Gesture Toward Life,' *The Physiotherapy Review*, XV (1935); 'Implications of Linguistic Revision for Theoretical and Clinical Neuropsychiatry,' *Amer. Jour. of Psychiatry*, XCIII (January, 1937); 'Neuro-linguistic and Neuro-semantic Factors of Child Development,' presented before Chicago Pediatric Soc., 1938, *Journal de Psychiatrie Infantile* (Swiss, 1941); 'General Semantics in Education, Counseling, and Therapy,' *Proceedings of Nat. Education Assoc.* (1939); and 'General Semantics and Schizophrenic Reactions: Neuro-linguistic and Neuro-semantic Mechanisms of Pathogenesis and Their Implications for Prevention and Therapy,' presented before Amer. Psychiatric Assoc., Chicago, 1939 (to be published in 1943). Long a student of Korzybski's work, Doctor Campbell was one of the first psychiatrists to apply general semantics. He organized and attended the first seminar given at Chicago in 1935 and the summer seminars at Northwestern University, 1936, 1937. He has been a member of the Board of Trustees of the Institute since its founding in 1938 and attended the holiday intensive seminars, IGS, 1938, 1939 and the Berkeley, California, seminar in 1942.

Francis Perry Chisholm was born south of the Mason and Dixon line, but in education and experience he belongs to New York State with the B.A., 1927, from Cornell University, courses at New York State College for Teachers, Albany, and the M.A. from Syracuse University, where he is now a candidate for the doctorate in English. Prior to his teaching college English for twelve years, he had experience in business and industry, taught science at the Fort Plain, New York, high school, and studied philosophy. His interest in general semantics stems primarily from his concern with methodological issues in making more effective the graduate school training of college teachers in relation to the aims of general education. He attended the June and December intensive seminars, IGS, 1940, and has lectured on general semantics at Vassar

and other colleges in New York State. He is a member of *Phi Delta Kappa* and the College English Assoc. Until the birth of their daughter in 1942, his wife, who also attended the June seminar, was a teacher in one of Syracuse's leading private schools. Mr. Chisholm spent last summer working in a war production plant.

Hervey Milton Cleckley, M.D., was born in Georgia, graduated from the University of Georgia in three years with the B.S. degree in English and mathematics in 1924, and went to Oxford University where he specialized in physiology and received the B.A. (Oxon.) in 1926. For his medical degree he specialized in psychiatry at the University of Georgia Medical School, 1926-1929. For the six years before he became professor of neuropsychiatry at that institution, he was psychiatrist of the U.S. Veterans Administration Hospital at Augusta. Here he collected much of the materials from which he generalized his formulations of semantic dementia and semi-suicide and which are recorded and interpreted in his book, *The Mask of Sanity: An Attempt to Re-interpret the So-called Psychopathic Personality* (Mosby, 1941). See also his recent article 'The So-called Psychopathic Personality with Special Emphasis on Its Relation to Selective Service,' *Jour. Med. Assoc. of Georgia*, XI (November, 1941). Since 1938 his professional bibliography, dealing with studies and observations in the various shock therapies, nutritional disorders, experimental medicine, teaching and administrative problems, etc., includes over twenty items which have appeared in the leading medical and psychiatric journals. The half dozen on problems in the shock therapies will be found in the *Amer. Jour. of Psychiatry* (1939-1941), *Archives of Neurology and Psychiatry* (1940), *Psychiatric Quarterly* (1941), *Journal of Pharmacology and Experimental Therapeutics* (1941), *Southern Med. Jour.*, and *Jour. of Med. Assoc. of Georgia* (1941). Of special interest to students of general semantics is his article, 'Insight as an Aim in Psychotherapy,' *Annals of Internal Medicine* (May, 1941), and his review of the second edition of *Science and Sanity, Mental Hygiene* (to be published in 1943). He is a diplomate of the Amer. Board of Psychiatry and Neurology; fellow

of the Amer. College of Physicians; and a member of Amer. Psychiatric Assoc.; Amer. Med. Assoc.; Southern Med. Assoc.; and the medical associations of Georgia and Richmond County. Doctor Cleckley has always been interested in athletic sports: football and track at University of Georgia; track, boxing and swimming at Oxford; and now badminton, which he plays in the regional tournaments. Long interested in Korzybski's work, he attended the June intensive seminar, IGS, 1941. He is now, along with his academic duties, writing a novel in which he is interested in implicitly showing what might be called the reverse of his picture of semantic dementia, i.e. normal life at the level of fullness of living.

Everett Wallace DeLong, M.D., received his medical degree from the University of Minnesota in 1933, specialized in internal medicine in his graduate study with the U. S. Public Health Service in New York, 1933-1934, and was instructor in internal medicine at the University of Southern California medical school, 1934-1936. For the past six years he has been in private practice at Los Angeles, and served as electrocardiographer to Methodist Hospital there. In August, 1942, he joined the Army Medical Corps with the rank of lieutenant, was assigned to the station hospital, Army Air Base, Williams Field, Arizona, where he worked out some unique group procedures in the management of stomach ulcer cases. He is now on a three months' detail for the study of internal medicine at the Mayo Foundation. He is a member of the A.M.A., California State Med. Assoc., Los Angeles County Med. Soc.; and the author of 'Standardization of Chest Leads and Their Value in Coronary Thrombosis and Myocardial Damage' (with A. M. Hoffman, M.D.) published in the *Archives of Internal Medicine*, 1933. He was married in August, 1940, and he and his wife attended the September intensive seminar, IGS, 1940, also the IGS seminar conducted by Korzybski at Los Angeles in 1942.

William Brothers Dunn attended Hardin Junior College in Wichita Falls, Texas, before he entered the University of Chicago where he specialized in Germanics and Germanic Philology for the B.A. degree, received in 1939. In 1940-1941 he taught be-

ginning German at the University of Colorado while completing his work for the master's degree with a thesis entitled 'Problems of Grammar in Modern Literary German.' He has since entered the armed services of the U.S. He attended the summer evening seminar, IGS, 1940 and is a member of the Soc. for General Semantics.

David Fairchild, agricultural explorer, now retired, of the U.S. Department of Agriculture, and emeritus president of Fairchild Tropical Garden, was born at State Teachers College, Lansing, Michigan, in 1869. He attended Kansas State Agricultural College and received the B.Sc., the M.Sc. and the Ph.D. degrees from that institution and the D.Sc. from Oberlin College. He helped in building the Bureau of Plant Industry, organized and directed for twenty years the Plant Introduction Service of the U.S. Department of Agriculture, for which he made long plant-collecting expeditions in the Netherlands East Indies, South America, Africa, Arabia and the West Indies. He was the director of the Armour, Lathrop and Fairchild Garden plant-collecting expeditions and has had part in building up the Plant Introduction Garden of U.S.D.A., in Florida, the Barro Colorado Biological Laboratory, the Gatun Lake, Panama Canal Zone, and Everglades Nat. Park projects. He is now president of the Amer. Genetic Assoc. of which he was one of the organizers. Since 1905 he has been a member of the board of directors, Nat. Geographic Soc. He is a medalist of the Massachusetts Horticultural Soc.; Public Welfare Medalist of Nat. Academy of Science; member of the Amer. Forestry Assoc.; Harvard Traveller's Club; Amer. Horticultural Soc.; *Ned. Indische Natuurhist. Vereeniging* of Java, N.E.I.; and the Soc. for General Semantics. He is the author of numerous articles and papers in many periodicals, especially the *Bulletin of the Bureau of Plant Industry of the U.S.D.A.*, and of *The Monster Book* (Nat. Geographic Soc.); *Exploring for Plants* (Macmillan); *The World Was My Garden* (Scribners). Doctor Fairchild has small plant laboratories in Baddeck, Nova Scotia, and at 'The Kampong', Coconut Grove, Florida, where he lives. He and Mrs. Fairchild, daughter of Alexander Graham Bell, have long been interested in general semantics,

and their home in Washington was the scene of one of Korzybski's first lectures on time-binding, non-aristotelian systems, etc. He is one of the honorary trustees of the Institute of General Semantics where he lectured in 1940 on returning from his last expedition to the South Seas.

Vocha (Bertha) Fiske, who founded the Los Angeles Soc. for General Semantics in 1939, was born in New York and educated in New England at private schools, at New Haven and the New England Conservatory of Music and Emerson College at Boston. In New York she attended the Strawbridge School of Rhythm and in England the Greenleaf School of the Theatre, Hampshire, and Speech Institute, London. She first went to California in 1915 where she appeared on the professional stage for some twelve years under the name of Bertha Fiske. She was a member of Reginald Pole's Ibsen Repertory Co., the companies of Margaret Anglin, Ruth St. Denis, etc.; in 1921 she played the leading woman's rôle in the Pilgrimage Play, Hollywood; and toured in nine European countries in 1925-1926. Later she studied at the University of California, Berkeley, receiving the B.A. degree, 1929, State Teachers Certificate, 1930, and the M.A. from University of Southern California in 1933. From 1930 to 1932 she was a member of the faculties of Cora Williams Junior College, and the public speaking department, University of California, both at Berkeley. In 1933-1934 she was research assistant to Mabel Farrington Gifford, California State Department of Education, and speech research project director, 1935-1937 for the department. Since then she has been at Los Angeles City College as instructor in drama, radio and English, and beginning in 1941, special instructor in radio propaganda for national defense. She is the author of various articles which appeared in *Theatre*, *Play Review*, and *Actors Equity Magazine* in the 1920's; of 'Pioneers in Speech Training' (her master's thesis), published in the *Emerson College Quarterly*, 1933-1934, and the *Group Verse Speaking Syllabus* (Expression Co., 1939). The bulletin-guide *Speech in Education*, compiled by her (see paper on WPA project) was published by the California State Department of Education in 1937. She is a member of the

Nat. Assoc. of Teachers of Speech; Western Assoc. of Teachers of Speech; Southern Calif. Assoc. of Teachers of Speech; Soc. for General Semantics; and an honorary member of *Zeta Phi Eta*. Miss Fiske organized and attended the seminars given by Korzybski in Los Angeles in 1935 and in 1939; she was a member of the summer evening seminar, IGS, 1939; and the IGS Los Angeles seminar, February, 1942. In the spring of 1942 she married Bartlett White, an Englishman, long a resident of Los Angeles, now in the U.S. Army. At present she is carrying on various war activities in Los Angeles as well as teaching.

Stanley Fletcher is a pianist with considerable reputation as a concert-artist in Boston, New York, Detroit, St. Louis, Chicago, etc. He supplied us with the scanty biographical data that follows. 'Born in England in 1910, came to this country in 1921, became a citizen in 1928; assistant professor of music at the University of Illinois; have previously taught at the Juilliard Foundation Summer School and the University of Michigan; have been interested in semantics for many years, especially as related to music, musical criticism, and aesthetics, but no published works as yet on the subject.' Mr. Fletcher's knowledge of general semantics, which he applies so effectively in his papers, has come from his study and obvious understanding of Korzybski's *Science and Sanity*.

Edwin Green has the unique distinction of conducting the first newspaper column on 'General Semantics and Human Affairs', which has been a weekly feature in the Los Angeles *Daily News* since November, 1941. He was born (1913) in Kansas City, Missouri, where he attended the Junior College, and had considerable business experience before he went to Los Angeles and decided on a career as a writer and editor. He worked in the editorial department of Bob Wagner's *Script* for several years before he spent the summer of 1940 studying with Korzybski, attending the June and August intensive seminars and evening seminars at IGS. On his return to the coast he became assistant to Mr. Manchester Boddy, publisher and editor of the *Daily News*, until he joined the U.S. Army in the spring

of 1942. He has recently been married and is now a sergeant, attached to the Public Relations Branch, Office of the Commanding General, Ninth Service Command, Salt Lake City. By special permission he has been continuing the general semantics column. He attended the IGS Los Angeles seminars in the winter of 1942, and at that time devoted his column to weekly interviews with Korzybski on problems of war and peace. He is the author of numerous magazine and newspaper articles, and a member of the advisory board, Los Angeles Society for General Semantics.

Samuel Ichiye Hayakawa is a Canadian citizen by birth. He graduated from the University of Manitoba, B.A., 1927, received the M.A. from McGill University in 1928, and the Ph.D. in English and philosophy from the University of Wisconsin, where he was assistant and then instructor in English from 1930 to 1939, when he was appointed assistant professor of English, Illinois Institute of Technology. During several summers he studied linguistics at the University of Michigan and worked on the Middle English and Early Modern English dictionaries. In the late summer of 1938 he studied with Korzybski during an intensive lecture course at the Institute of General Semantics. That autumn he tried out some applications with his students, and during the summer of 1939 wrote the first draft of *Language in Action*, which in mimeographed form was used in 'the experimental group' at Wisconsin the following college year. In 1941 the revised text with supplements was published by Harcourt Brace as a college textbook and, in different format for the general reader, was distributed as Book-of-the-Month choice for December of that year. He has published many poems, but his poetic gift, the wellspring of the vitality in all his writing, tends to be obscured by his success and reputation as a prose writer. His articles and reviews on literary and current social problems appear in *Harper's Magazine*, *New Republic*, *Sewanee Review*, *University of Toronto Quarterly*, *Dalhousie Review*, *American Speech*, *Common Sense*, *Poetry: A Magazine of Verse*, *Publications of Modern Language Assoc.*, etc. He has delivered many papers on general semantics, of which the earliest is 'General Semantics and Propa-

ganda,' published in *Public Opinion Quarterly*, 1939. He is also author (with Howard M. Jones) of the volume *Oliver Wendell Holmes* (1939). He is a member of the Linguistic Soc. of Amer.; Amer. Dialect Soc.; Modern Language Assoc.; Soc. for General Semantics; Nat. Council of Teachers of English; A.A.U.P.; etc. He has attended several seminars at the Institute of General Semantics, and is a fellow of the Institute, where he conducted a course on general semantics, language and literature in the summer of 1942. In Chicago in addition to his teaching at Illinois Institute of Technology, he is known for his book reviews in the *Chicago Sun*, his weekly column in *The Defender*, and his work with the Consumer Co-operatives. At present he is serving on Chicago OCD committees.

Velma Bissel Hiser attended Grinnell College, graduated from Northwestern University with the bachelor's degree in 1926, and received the master's degree from the State University of Iowa in 1938 where she specialized in speech and speech pathology with Professor Wendell Johnson. She attended the first summer intensive seminar, IGS, 1938. Prior to joining the Grinnell College faculty where she is instructor in speech, she taught speech and English in the Panora, Iowa, high school. Mrs. Hiser is a member of the Nat. Assoc. of Teachers of Speech and Amer. Speech Correction Assoc.; and author of 'Iowa Hand Usage Dexterity Quotients of One Hundred High School Students,' which appeared in the *Jour. of Educational Psychology* in February, 1941.

Stewart Walker Holmes was born in Connecticut, graduated from Williams College, B.A., in 1931, and received the Ph.D. in English from Yale University in 1934. Since then he has been teaching English in private schools and colleges until he resigned, 1942, his assistant professorship in English at the Citadel, the Military College of South Carolina, to work at a war-plant in Boston as expeditor and personnel manager. He attended the June intensive seminar, IGS, 1940, and is a member of the Soc. for General Semantics. He is the author of numerous scholarly articles, among them 'The Sources of Browning's "Sordello",' *Studies in Philology* (July, 1937); 'Brown-

ing's "Sordello" and Jung,' *P.M.L.A.* (September, 1941); and 'Browning: Semantic Stutterer' (to be published). Of his war work in relation to education he writes, 'Now instead of dealing primarily with symbols, I have to report with meticulous accuracy highly important concrete facts. What wonderful discipline it provides! Besides the training in accurate reporting, I am seeing from within what goes on in America's industrial war effort. If every teacher had a year's discipline like this, a better crop of teachers—and pupils—would result. At present I am taking a course called *The Art of Straight Thinking* at Harvard (full of reifications and identifications) . . . [I expect] to work up a course in semantic evaluation and expression—the *sine qua non*, the keystone of post-war education.'

Charles Bertram Horton, M.D., was born in Canada, and received his medical training at the University of Toronto, graduating with the bachelor's degree in medicine in 1925 and receiving the doctor's degree in 1928. For the seven years before he joined the U.S. Army Medical Corps with the rank of major, he was director of the Dayton Guidance Clinic, Dayton, Ohio, and is now hospital psychiatrist at Barksdale Field, Louisiana. Previously he was resident psychiatrist, Connecticut School for Boys, and then director of the Bureau of Mental Hygiene, Connecticut State Department of Health. He attended the August intensive seminar, IGS, 1939. The General Semantics Discussion Club of Dayton which he founded grew out of the study groups he developed at the clinic soon after this seminar. His chief interest is in the preventive or mental hygiene aspects of psychiatry and he is the author of many popular articles on the subject published in newspapers and magazines. He is a member of the Nat. Committee for Mental Hygiene; a Fellow in the Amer. Orthopsychiatric Assoc.; a member of the Amer. Psychiatric Assoc., the Amer. Medical Assoc., and the Soc. for General Semantics.

Wendell Johnson was born in Kansas, and graduated from the State University of Iowa where he received the B.A. in 1928, the M.A. in 1929, and the Ph.D. in clinical psy-

chology and speech pathology in 1931. In 1928 he was editor of the *Iowa University Literary Magazine* and is now editor-cleet, *Journal of Speech Disorders*. At Iowa, before he became associate professor of psychology and speech pathology, he has been successively research assistant and research associate, 1929-1937, assistant professor of psychology, speech pathology and child welfare, 1937-1939. From 1939 through 1942, he was technical director, Iowa Remedial Education Survey and Demonstration Program, and has been a member of the research committee, International Council for Exceptional Children. In 1941, he delivered the third annual lecture series for the Los Angeles Society for General Semantics. Doctor Johnson is a member of *Phi Beta Kappa* and *Sigma Xi*; a fellow of the Iowa Academy of Science; fellow and council member, Amer. Speech Correction Assoc.; fellow of the Institute of General Semantics. He is also a member of the Linguistic Soc. of Amer.; Amer. Psychological Assoc.; Midwestern Psychological Assoc.; Nat. Assoc. of Teachers of Speech; Central States Speech Assoc.; and Soc. for General Semantics. He is author of *Because I Stutter* (Appleton-Century Co., 1930); *Influence of Stuttering on the Personality* (University of Iowa Studies in Child Welfare, 1932); and *Language and Speech Hygiene* (General Semantics Monograph No. I, 1939). His articles and other writings have appeared in *Commentator*, *Look*, *Parents' Magazine*, *You and Your Child*, *Hygeia*, *Jour. of Social Psychology*, *Quarterly Jour. of Speech*, *Jour. of Experimental Education*, *Child Welfare*, *High School Teacher*, *School Executives Magazine*, *Jour. of Speech Disorders*, *Jour. of Exceptional Children*, *Amer. Jour. of Psychology*, *Jour. of Genetic Psychology*, *Jour. of Educational Psychology*, *Jour. of Adult Education*, *Proceedings of the Amer. Speech Correction Assoc.*, *Jour. of Iowa State Medical Soc.*, *Iowa Law Review*, *Des Moines Register*, *Register and Tribune Syndicate*, *New York Times Education Supplement*. His new book will be published by Harpers in 1943; the title is not yet announced but it will deal with applications of general semantics. Doctor Johnson has long been a student of Korzybski's work as recounted in his paper, 'Experiences in Developing a University

Course in General Semantics,' in this volume. He first met Korzybski at Chicago in the summer of 1936, worked with him privately in 1937-1938, and he and his wife attended the August intensive, IGS, 1939. Soon after the Institute was founded in 1938, the lecture course arranged there for one of Doctor Johnson's classes during one week in the summer was the beginning of the intensive type of seminars at the Institute. In 1941 he was one of the first to be appointed a fellow of the Institute of General Semantics, and acts as consultant on publishing and other matters.

Douglas McGlashan Kelley, M.D., was reported to be 'somewhere in England with the U.S. Army as first lieutenant in the Medical Corps' when galley proofs of his paper and a request for biographical data were sent to him in the autumn of 1942. The following information is taken from the files and records at the Institute of General Semantics where he attended the holiday intensive seminar, 1939. He received bachelor's and medical degrees from the University of California in 1933 and 1937, and was assistant in psychiatry, University of California Hospital, 1937-1938. He was resident in psychiatry, 1938, and Rockefeller fellow in psychiatry, 1939-1941, at the New York State Psychiatric Institute and Hospital and the New York Neurological Institute, and research fellow in neurology, College of Physicians and Surgeons, Columbia University. In 1941 he received the doctorate in medical science from Columbia University and was appointed instructor in psychiatry, University of California Medical School. He is assistant editor of the *Rorschach Research Exchange* and in New York he was chairman of the training committee of the Rorschach Institute. He is the author of many articles on the Rorschach test and other subjects, and a member of the Amer. Psychiatric Assoc.; Research Council for Studies on Alcohol; Rorschach Institute; A.A.A.S.; and Amer. Folklore Soc. In his undergraduate days he was deeply interested in the study of conjuring, has given many demonstrations, and is recognized as a professional magician. This combination of neuropsychiatry and magic in his experience uniquely qualifies him for his exposition of the neuro-linguistic and

neuro-semantic mechanisms of mis-evaluation as suggested by Korzybski.

M. Kendig was born in New York where her family, Dutch and English, settled in the early seventeenth century. She was educated in private schools in New York and New England; received the B.A. from Vassar College where she was chiefly interested in chemistry and history, and the M.A. in education from Columbia, specializing in problems of instruction, guidance and administration in higher education; she also studied at Geneva, Switzerland. In addition to school and college administration, her experience includes educational work with several publishing houses and periodicals. Long interested in reading and other educational problems related to then unrecognized difficulties connected with language, she began the study of general semantics shortly after the publication of *Science and Sanity*, and is known as the first school administrator to attempt a thoroughgoing neuro-linguistic and neuro-semantic approach to the problems of school learning and life adjustment. From 1934 to 1938 when she was principal of the Barstow School, Kansas City, Missouri, she undertook to revise the entire program of the school from the nursery department through high school along lines suggested by the principles of general semantics. And for the purpose of re-educating the teachers Korzybski conducted two seminars at the school. Miss Kendig became Korzybski's assistant when the Institute was founded in 1938. Since then she has acted as the editor and educational director of the Institute of which she is now associate director and a member of the Board of Trustees. In 1941 she organized the program and was general secretary for the Second American Congress on General Semantics.

David Kopel graduated from Northwestern University where he received the B.S., 1930, M.S., 1934, and Ph.D., 1935, degrees, and was psychologist in the Psycho-Educational Clinic and instructor in the school of education. Before he became a teacher at Chicago Teachers College and educational consultant for the public schools in Chicago, and in Gary, Indiana, he was school psychologist at Evanston, and he has been visit-

ing lecturer at the Educational Guidance Center, Alameda, California, and Teachers College, Columbia University. He is co-author with Professor Paul A. Witty of *Reading and the Educative Process* (Ginn, 1939), and author of *Diagnostic Child Study Record* (Northwestern Psycho-Educational Clinic, 1936 and 1938); 'Educational Diagnosis and Remedial Instruction,' Chap. XI, *Mental Hygiene in Modern Education* (Far-rar & Rinehart, 1939); and *The Student Background Inventory* (Chicago Teachers College, 1941). Since 1936 he has published some thirty articles dealing with various aspects of reading, guidance, and research, in professional educational periodicals including Educational Administration and Supervision, Jour. of Educational Research, Jour. of Educational Psychology, Jour. of Psychology, English Jour., Transactions of the Illinois Academy of Science, Educational Trends, Elementary English Review, Education, Primary Reading Monograph, Educational Method, Jour. of Experimental Education, Jour. of Higher Education, and Teachers College Jour. He is a member of Amer. Psychological Assoc.; Amer. Assoc. of Applied Psychology; Midwestern Psychological Assoc.; Illinois Soc. of Consulting Psychology; Nat. Soc. for the Study of Education; A.A.U.P.; A.A.A.S.; Progressive Education Assoc.; etc. He attended the June intensive seminar, IGS, 1939.

Alfred (Habdank Skarbek) Korzybski, now a naturalized citizen, comes of a family of the old Polish nobility distinguished as scholars and scientists. He was born in Warsaw when that part of Poland was under Russian domination and was trained as an engineer at the Polytechnic Institute of Warsaw, with graduate study, both scientific and historical, in Germany and Italy. At one time he taught mathematics, physics, French, and German in Warsaw, but from early boyhood he spent most of his time in the study of science and carried the responsibility for the family estates which included a large farm. In the first world war he was in the cavalry and later in the body-guard heavy artillery of the Russian army, and was attached to the intelligence department of the general staff because of his knowledge of languages and insight into human reactions. His early responsibilities

in contact with the soil, livestock and peasants, his engineering education, his knowledge of the history of science and culture, languages, etc., and his war experience are reflected in his quite unique approach to the problems of human adjustment, which resulted in his formulation of the first positive theory of sanity. In December, 1915, Korzybski was sent as an artillery expert to 'North America' (the U.S.A. and Canada). Later he was successively secretary to the Polish-French Military Commission; recruiting officer for the Polish-French Army; war lecturer for the U. S. Government when he traveled all over the United States; secretary of the Polish Commission (labor section) of the League of Nations. In 1919 at Washington, D. C., he married Mira Edgerly, an American, internationally known as a portrait painter, and devoted the next two years to writing the *Manhood of Humanity: The Science and Art of Human Engineering*. The years from 1921 to 1928 were largely spent in the study and investigations fundamental to his formulations of a theory of sanity and the non-aristotelian system with which he was to instrument his time-binding theory of man, first expounded in *Manhood* and later developed in his two long papers on time-binding published in 1924 and 1925. During this period he spent two years in the study of insanity under the guidance of his friend, the late Dr. William Alanson White at St. Elizabeth's Hospital in Washington, D. C. He began to write *Science and Sanity* in 1927 and finished the first draft in 1928 while studying in Pasadena, California. Subsequent drafts were written at his home in Brooklyn where the text was finally revised and seen through the press. During the four years after *Science and Sanity* was published in November, 1933, Korzybski was engaged in world-wide correspondence, wrote various scientific papers, lectured and conducted his first seminar courses in various parts of the country including New York, Boston, Kansas City, San Francisco, Los Angeles, Olivet, Michigan and in Chicago where seminar courses were arranged for him by his medical students at the University of Chicago in 1935, and at Northwestern University in the summers of 1936 and 1937. In 1935, when students of *Science and Sanity* at the Central Washington College of Education, Ellensburg, organized the First American

Congress on General Semantics, March 1 and 2, Korzybski delivered the principal addresses, and later lectured at the University of Washington. Those who know the professional difficulties under which Korzybski worked from 1921 to 1938 wonder at his energy, courage and fortitude in undertaking his investigations, the writing and publication of *Science and Sanity* and the first empirical demonstrating of his theories and method, single-handed without financial aid or institutional backing. In June, 1938, the Institute was founded as a center for teaching and publishing and promoting research, and funds were secured to finance the organization and expenses during the first two years. The Institute was incorporated as a non-profit educational institution with Korzybski as director and president of the Board of Trustees. In 1939, a long list of distinguished men in science, mathematics, medicine, and psychiatry who had for years appreciated the need for Korzybski's formulations honored him by accepting his invitation to serve as honorary trustees of the Institute. Since 1940 the Institute has been kept going by the voluntary contributions of a small number of students, the sale of the growing list of publications, and the tuitions derived from the heavy schedule of thirty-two seminars which Korzybski has conducted in these four and half years.

Irving J. Lee graduated in 1931 with the B.S. degree from New York University where he majored in English, attended the Breadloaf School of English at Middlebury in 1932, received the M.A. in public speaking at Northwestern University in 1935, and the Ph.D. in rhetoric and social psychology in 1938. He was instructor in social sciences at the high school, Boonton, New Jersey, for three years. At Northwestern he was assistant professor of public speaking and chairman of the division of speech at the University College from 1939 until June, 1942, when he was appointed chairman of the department of public speaking in the school of speech of the University at Evanston. In July, 1942, he entered the army as a lieutenant in the air corps, and is stationed at the School of Applied Tactics, Orlando, Florida, where he is 'involved in the development of training aids.' Since 1937 he has been consultant and lecturer for the

Nat. Safety Council and the Northwestern Traffic Safety Institute, and was a member of the committee on psychological warfare of the OCD, Chicago. He attended the August intensive seminar, IGS, 1939, after considerable independent study which he describes as his 'six-months battle to digest everything Korzybski ever put into print.' In February, 1940, he introduced the course in general semantics entitled 'Language and Thought' at Northwestern which he taught for the next four semesters and in the summer sessions, and later supplemented with advanced courses. He is best known to students of general semantics for his textbook *Language Habits in Human Affairs* (Harpers) published in December, 1941, a remarkable achievement, as it was written in less than five months while he was carrying his usual academic load. When he went into the army, his 'next book', which he planned as an extensive treatment of multi-ordinality, etc., was well under way, and he had been carrying on for some time experimental applications in reading, stage-fright and public discussion. He is the author of many articles and pamphlets, among them *How to Make the Safety Speech* (Chicago: The Nat. Safety Council, 1939); 'The Concept of Emotional Appeal in Rhetorical Theory,' *Speech Monographs*; 'General Semantics and Public Speaking,' *Quarterly Jour. of Speech* (1940); 'The Adult in Courses in Speech,' *College English* (1941); 'Language for the Living,' *Educational Trends* (1940); 'Four Ways of Looking at a Speech,' *Quarterly Jour. of Speech* (1942); and *Away with Prejudice* (Social Action Pamphlet Series, 1941). He is a member of the Soc. for General Semantics, Nat. Assoc. of Teachers of Speech, and other national societies, and an honorary fellow of the Institute of General Semantics.

Leo Alfred Lerner was born and educated in Chicago. He studied journalism and history at Northwestern University, and since 1928 has done various kinds of work on Chicago newspapers and taken an active part in civic affairs. He is now managing editor of one of the larger community newspapers in the city. He is a director of the Chicago Public Library and of the Lincoln-Belmont Y.M.C.A., was president of the Chicago Citizens School in 1941, and is now

giving much of his time to activities connected with the war. He is a director of the 'Union for Democratic Action', a founder of the 'Share Your Auto Plan', adjutant general of the Aviation Cadet Recruiting Aids. In the autumn of 1942 he made a poll of American editors on 'practices of the U.S. press', and was on the executive board of the Independent Voters Committee. He writes special editorials in his newspaper, and many of his addresses, such as 'The Press of Chicago' delivered at the Library Forum, are reprinted in his and other papers. He attended the autumn evening seminar, IGS, 1940, and is a member of the Soc. for General Semantics.

Hugh Gray Lieber was born in Mississippi, received the bachelor's degree from the University of Oklahoma and the master's from Columbia University. His fields of specialization, art and mathematics, are effectively combined in the illustrated *Modern Mathematical Series*, of which he and his wife, Lillian R. Lieber, are co-authors; see 'Science—The Modern Totem-Pole,' the editor's note, and Mr. Lieber's illustration for this paper. He painted the mathematical murals at Long Island University in 1938 and those at the Brooklyn College of Pharmacy in 1941. Examples of his work are included in the exhibits in the Western Art Museum in Moscow, U.S.S.R. He is co-editor of the publications of the Galois Institute of Mathematics, and since 1931 has been head of the mathematics department, Long Island University. Previously he was instructor in mathematics at the University of Oklahoma, 1919-1921, and at Columbia University until 1928, when he became instructor, and then in 1929, assistant professor, at Long Island. In World War I he served as lieutenant and then captain in the Coast Artillery, U.S. Army. He is a member of the Amer. Mathematical Soc.; New York Academy of Sciences; Amer. Museum of Natural History; and Soc. for General Semantics.

Lillian R. Lieber was born in Russia and educated in this country, receiving the B.A. from Barnard College, the M.A. from Columbia University, and the Ph.D. from Clark University. Her fields of specialization are mathematics and physical-chemistry and she was Huff Memorial fellow at Bryn Mawr,

1915-1917. Before she became director of the Galois Institute of Mathematics at Long Island University in 1934, she was lecturer in mathematics at that university, and head of the physics departments first at Wells College and then at Connecticut College for Women. She is a fellow of the A.A.A.S.; and a member of Amer. Mathematical Soc.; Mathematics Assoc. of Amer.; New York Academy of Sciences; and Soc. for General Semantics. Her doctoral dissertation was on sugar hydrolysis, and she is the author of texts of the *Modern Mathematical Series* (see editor's note, 'Science—The Modern Totem-Pole') and co-editor with her husband of the publications of the Galois Institute.

Robert Lord has been a motion-picture writer and producer with Warner Brothers studio for the past fifteen years, where among dozens of other pictures, he produced 'Tovarich,' 'The Dawn Patrol,' 'The Prince and The Pauper,' 'Dodge City,' 'One Foot in Heaven,' etc. In the spring of 1942 he was commissioned a major in the signal corps of the U.S. Army, attached to the Photographic Center, Long Island City, but when last heard from he was still in Hollywood at Metro-Goldwyn-Mayer producing three pictures in Spanish, Portuguese and Chinese for the War Department's Bureau of Public Relations. Previously he produced a number of official training films. He was born in Chicago, attended the high school of the University of Chicago, and graduated from Harvard College in 1923 where he was a member of Professor Baker's famous 47 drama workshop. After graduation he was with several Boston newspapers as reporter and then dramatic, motion-picture, and music critic. In New York he tried his hand at every sort of theatrical job, including acting, and was for some time associated with Robert Milton in producing Broadway plays, before he became a writer at the Fox New York studio. In Hollywood he started out writing stories for Tom Mix, and has worked at Columbia, First National and other studios. His hobbies are swimming and tennis. In 1938, he read *Science and Sanity*, and wrote 'Oasis in the Desert,' 'About a Book,' and several other short articles for *Script* about Korzybski's work, before and after attending the December intensive

seminar, IGS, 1939, which he was only able to work into his busy schedule by flying to and from Chicago.

Donald McLean was born in Ohio and attended Princeton University, the universities of Wisconsin and Southern California, Colorado College, and the Mills College summer workshops, 'Neuropsychiatry for Teachers' directed by Dr. D. G. Campbell. In addition to his work as consulting psychologist and consultant, *American Institute of Family Relations*, he has had considerable experience in business and ranching in the west. His book *Knowing Yourself and Others* (Holt) is a psychology textbook for high schools officially adopted by the boards of education of Los Angeles, the state of Virginia, and many cities in Michigan, Illinois and Massachusetts. He is the author of *Growing Up Emotionally*, also used in Los Angeles and Pasadena schools; 'Homosexuality Is Curable'; 'Emotional History Questionnaire'; and *A B C of General Semantics*. He attended Korzybski's course of lectures in Los Angeles, 1939, and the IGS intensive seminar conducted there in the winter of 1942, and is a member of the Soc. for General Semantics.

Raymond William McNealy, M.D., was born in Missouri, spent his youth in Iowa, and graduated from the University of Illinois College of Medicine in 1910. His post-graduate work was done in Vienna and elsewhere on the Continent. He was first instructor in embryology, histology and anatomy and then assistant professor of surgery at the University of Illinois before he became associate professor of surgery, Northwestern University Medical School. He is a fellow of the Amer. College of Surgeons; fellow of the International College of Surgeons; member of the Founder's Group of the Amer. Board of Surgery; member of the board of trustees, Northwestern University; member of the Western Surgical Assoc.; the Chicago Surgical Soc.; A. M. A.; Illinois and Chicago Medical Societies; Institute of Medicine; U. S. Naval Institute; *Alpha Omega Alpha*, etc. Since 1936 he has been president of the attending staff of the Cook County Hospital where he is now attending surgeon. He is superintendent and chief surgeon of the Wesley Memorial Hospital in

Chicago and member of the board of trustees; and also consulting surgeon, the Illinois Masonic Hospital and the Post-Graduate Hospital. His contributions to surgical literature began in 1914 and the bibliography of his writings includes some seventy articles drawn from his wide and varied surgical experience, his paper in this volume being his first on problems of medical pedagogy. Doctor McNealy first became interested in Korzybski's methodology in 1940 and attended the winter evening seminar, IGS, 1941. He has since lectured to seminar classes at the Institute of General Semantics, and is now a member of the Board of Trustees of the Institute. He is also on the executive committee of the Soc. for General Semantics.

John Charles Mergener, M.D., graduated from Knox College with the B.S. degree in 1932, received the bachelor's and doctor's degrees in medicine from Northwestern University Medical School, and was interne at St. Luke's Hospital, Chicago. He then joined the staff of the Neuropsychiatric Institute, Chicago, and did research and teaching in the University of Illinois Medical School, department of psychiatry. Prior to his commission as captain in the U. S. Army Medical Corps in the summer of 1941, he was senior resident psychiatrist at the Neuropsychiatric Institute, and studied with Korzybski in the summer evening seminar, IGS, 1940. His research work has been related to electroencephalographic studies and applications of the Rorschach Test, and he is the author of 'Comparative Study of Intravenous and Subcutaneous Insulin in Psychotic Patients' and 'Memory Studies in Patients After Shock Therapy.' His recent article 'Neuropsychiatric Evaluation of the Potential Soldier' was done with Dr. H. H. Goldstein, and he is at work on a projected article 'Prophylactic Psychiatry in Helping the Draftee.' For the past year and a half he has been attached to the station hospital, Camp Davis, except for a three months detail to the Mayo Foundation in the summer of 1942, and earlier work on an induction team in Georgia. His recent article written with Doctor Goldstein summarizes many of their experiences and findings among large numbers of men from varied districts and backgrounds. In a recent letter he

writes: 'Camp Davis has become a large training center for officers and technical experts, where the men are under unique strains and stresses resulting in frequent emotional upsets, and I am particularly interested in working out closer collaboration between the psychiatric department and the personnel and classification section of the camp.' He is a member of *Phi Beta Kappa*; Amer. Medical Assoc.; Chicago Medical Soc.; Illinois Medical Soc.; Illinois Psychiatric Soc.

Adolf Meyer, M.D., the founder of psychobiology, was born and educated in Switzerland and his post-graduate studies were carried on at Paris, London, Edinburgh, Zürich, Vienna and Berlin. He received the M.D. from the University of Zürich in 1892, and LL.D. degrees from Glasgow and Clark Universities, and the Sc.D. from Yale University. He came to the U. S. in 1892. His name is so inseparably connected with Johns Hopkins University, where he has been since 1910 as professor of psychiatry, psychiatrist-in-chief of the Johns Hopkins Hospital, and director of the Henry Phipps Psychiatric Clinic, that his distinguished services at other institutions are less well known. From 1892 to 1910 he held various posts at University of Chicago, Clark University, New York Psychiatric Institute and State hospitals, Cornell University Medical College, and state hospitals for the insane in Illinois and Massachusetts. He was Salmon Memorial lecturer, 1932, and Maudsley lecturer, 1933. He is a member and former officer of many of the leading psychiatric and neurological and medical associations in this country, and in England, France, and Holland; honorary president, Nat. Committee for Mental Hygiene and president of International Committee since 1937; member of the Amer. Institute of Criminal Law and Criminology and various scientific societies. His writings include extensive contributions on neurology, pathology and psychiatry. In 1941 he retired with the title of emeritus professor of psychiatry, Johns Hopkins University, and is now writing another book at his home in Baltimore. Doctor Meyer met Korzybski shortly after the publication of *Manhood of Humanity* and has since followed with interest his methodological investigations and their theoretical and ther-

apeutic applications. He is one of the honorary trustees of the Institute of General Semantics.

John Frederic Moore graduated from Amherst College with the bachelor's degree in 1933, received the M.A. from Syracuse University, 1934, and the Ph.D., 1940, from Ohio State University where he was assistant and instructor in English for six years. He was Amer. Field Service fellow, 1934-1935, and his 'Donne, Scholasticism, and the Metaphysical Conceit' appeared in *La Revue Anglo-Américaine*, 1936. He is a member of the Modern Language Assoc., A.A.U.P., Amer. Federation of Teachers. He is now assistant professor of English at Connecticut College for Women. While at Ohio State, he carried on independent study of Korzybski's *Science and Sanity*, etc., but has not attended seminars at the IGS. On going to Connecticut College he was able to start carrying out his plans for experimental application of the methodology in teaching literature which is reported in this volume.

Elwood Murray was born in Illinois, graduated from Hastings College, Nebraska, with the B.A. degree in 1922, and received the M.A., 1924, and Ph.D., 1931, in speech and psychology of speech at the University of Iowa. He taught in Abraham Lincoln High School, Council Bluffs, Iowa, 1924-1927, was instructor in speech, Purdue University, 1927-1929, graduate research fellow, University of Iowa, 1929-1931, and since 1931 has been at the University of Denver where he is professor and chairman, department of speech and dramatic arts. He is a fellow, Amer. Speech Correction Assoc.; past-president, Western Assoc. Teachers of Speech; past vice-president, Nat. Assoc. Teachers of Speech; past vice-president, *Tau Kappa Alpha*; member of Amer. Assoc. for Applied Psychology; Colorado Schoolmasters; *Phi Delta Kappa*; *Pi Kappa Delta*; and Soc. for General Semantics. Doctor Murray originated the *discussion progression* method used in forensic leagues, and is director of the annual Rocky Mountain Speech Conferences. He is the author of *The Speech Personality* (Lippincott, 1940); 'Studies in Speech and Personality,' *Speech Monographs* (Oct. 1935, Oct. 1936); 'Speech Standards and Social Integration,' *Quarterly Jour. of Speech* (February, 1940); 'Problems in

Speech Personality Development,' *Jour. of Higher Education* (April, 1941); 'The Integrative Functions of Speech,' *Teachers College Jour.* (January, 1942); and other articles. He attended the August intensive Seminars, IGS, 1939, 1940, and some of the lectures in other seminars. Early in 1941 he first suggested that the Second Amer. Congress be held at the University of Denver, and was subsequently co-organizer and general chairman of the Congress.

May Watrous Niles received the B.S. in physical education from Syracuse University in 1923, the Certificate in Physiotherapy from the graduate school of medicine at Harvard in 1930, and the M.S. in psychology from Syracuse in 1938. She was physical education secretary at the Huntington Club in Syracuse, 1925-1927, and director of physiotherapy, Syracuse Department of Health and the Syracuse Free Dispensary, from 1930 to 1942 when she became director of physiotherapy at the Syracuse Memorial Hospital. She married in 1940. The following articles were published under her maiden name, Watrous, 'Suggestions for Muscle Re-education of the Legs of the Spastic Pre-school Child,' *Physiotherapy Review* (1935); 'The Examination and Treatment of the Spastic Patient: The Role of Performance Muscle Tests' (with R. N. Severance, M.D.), *Physiotherapy Review* (1939); 'An Action Ability Test for the Spastic Patient,' *Physiotherapy Review* (1940). She attended the August intensive seminar, IGS, 1940.

Worth James Osburn was born in Missouri and received the M.A. from Vanderbilt University in 1904 and the Ph.D. from Columbia University in 1921. Before he became professor of remedial and experimental education at the University of Washington in 1936, he was successively: teacher, Central College, Fayette, Missouri, 1905-1908; superintendent of schools, Cartersville, Missouri, 1908-1914; professor of educational psychology, Northwest Missouri State Teachers College, Maryville, 1915-1919; state director of tests and measurements, Madison, Wisconsin, 1920-1928; professor of school administration, Ohio State University, 1928-1934; and professor of education, Buffalo State Normal School, 1935-1936. He is the author of many educational articles and the

following volumes: *Corrective Arithmetic* (Houghton Mifflin); *Enrichment of the Curriculum for Gifted Children* (Macmillan); *Are We Making Good in Teaching History?* and *Overlapping and Omissions in Our Courses of Study* (reports on two state research investigations, both published by Public School Publishing Co.). He is a member of the Nat. Educational Assoc., Nat. Soc. for the Study of Education, A.A.A.S., etc.

Eleanor Parkhurst was born in Massachusetts and graduated in 1931 from Wellesley College, where she also received her master's degree in 1933. Prior to her present work with the Rhode Island Children's Friend Society, she was a member of the English department at Wellesley, taught the economics of consumption at Iowa State College and was on the staff of the social service administration department, University of Chicago. She has also completed the residence requirements and is a candidate for the Ph.D. degree in social service at the University of Chicago. She is a member of the A.A.U.W., the Amer. Assoc. of Social Workers, and the Amer. Assoc. of Psychiatric Social Workers. While working at the University of Chicago, she attended the autumn evening seminar, IGS, 1938, and has written several unpublished memoranda interpreting the interrelations of general semantics with the psychoanalytic, psychotherapeutic approach to social work. Out of her several years experience she is now writing 'another paper on the general semantics principles as they can be actually put into use by social workers, as distinguished from the way in which they are now more or less unconsciously utilized.'

Wilson Benton Paul was born in Louisiana and graduated from Taylor University, B.A., in 1929. His work in speech and dramatic arts was done at the University of Iowa where he received the M.A., 1932, and Ph.D., 1940, degrees. Before he became assistant professor of speech in the department of speech and dramatic arts at the University of Denver, he was successively a high school instructor; instructor in speech, Taylor University; professor and chairman of the department of speech and dean of men, Illinois Wesleyan University. He is a member of *Phi Delta Kappa*; *Tau Kappa Alpha*; *Theta Alpha Phi*; *Alpha Psi Omega*; and secretary-treas-

urer, speech division, Colorado Education Assoc.; university-level member of advisory committee, Western Assoc. of Teachers of Speech; member of Nat. Assoc. of Teachers of Speech and Nat. Education Assoc. On the Denver Defense Council, he is chairman of the speakers bureau and member of the committee on information and education.

William Herbert Harrison Pemberton graduated from the University of Washington with the B.A. degree in 1936, and is a member of the Rorschach Research Institute, New York City, where he received his training as a Rorschach technician in 1939. He attended the December intensive seminar, IGS, 1939, before returning to San Francisco. In addition to his private practice in clinical psychology specializing in Rorschach personality diagnosis, he is on the staff of the University of California Hospital, and has recently been appointed research technician of the Langley Porter Clinic, Medical Center, San Francisco. He is secretary of the West Coast Division of the Rorschach Institute. In the summer of 1940 he was assistant instructor at Mills College in the workshop, 'Neuropsychiatry for Teachers', directed by D. G. Campbell, M.D., and associate instructor in 'Rorschach Technique', 1942, Mills College Extension. He has matriculated for the doctorate in educational psychology at the University of California. He is the author with D. McG. Kelley, M.D., of 'Intravenous Sodium Amytal Medication as an Aid to the Rorschach Method,' *Psychiatric Quar.*, XV (1941).

Clarence A. Peters graduated from Parsons College, Iowa, with the B.A. degree in 1928, received the M.A. from the University of Iowa in 1934, and has completed his work in speech and psychology for the Ph.D. at Northwestern University, where he is assistant radio director as well as director of debate. Previously he has been head of the speech department of the Monmouth, Illinois, high school; director of debating at Michigan Central high school, Kalamazoo, Michigan; and instructor in speech, Albion College. He is a member of *Delta Sigma Rho*; *Pi Kappa Delta*; *Theta Alpha Phi*; Nat. Assoc. of Teachers of Speech; and Illinois Assoc. of Teachers of Speech. He is the author of 'A Study of the Relation of Fa-

cility in Speaking to Mirror Reading,' *Archives of Speech*, and 'A Therapeutic Procedure in the Teaching of Speech,' *Quarterly Jour. of Speech*. He attended the August intensive seminar, IGS, 1940.

William Ferdinand Petersen, M.D., did his undergraduate work for the B.S. degree at the University of Chicago and graduated from Rush Medical School in 1912. Since then, except for two years in the Medical Corps, 1918-1919, he has been engaged in teaching and research, first at the Vanderbilt University Medical School where he was assistant professor of experimental medicine and pathology until 1917, and then at the University of Illinois Medical School, Chicago, as professor of pathology and bacteriology. His special professional interests have been enzymes, pellagra, tuberculosis, non-specific therapy, capillary permeability, the meteorological environment. The introduction to his paper in this volume reflects his interest in the early history of medicine as well as in the meteorological environment, to the study of which his *The Patient and The Weather* (1934-38) is a monumental contribution of empirical data, etc. For the past several years he has also been engaged in an intensive study of Lincoln's life and character and the correlations with meteorological conditions. Among his other scientific writings are *Protein Therapy and Non-specific Reactions*, 1922; *Skin Reactions, Blood Chemistry and Physical Status of Normal Men and Clinical Patients* (with S. A. Livinson), 1930. Doctor Petersen is a trustee of the Institute of General Semantics, and a member of Chicago Literary Club; A. M. A.; Soc. of Experimental Pathology; Institute of Med.; Soc. of Pathologists and Bacteriologists; Chicago Pathological Soc.; Chicago Soc. of Internal Medicine; Amer. Assoc. of Physical Anthropologists; etc.

James Parker Pettegrove was born in Maine and educated in New England. He received the bachelor's degree from Bowdoin College in 1930 and the master's from Harvard University in 1931. As Rhodes scholar from New England, he was at Merton College, Oxford University, from 1931 to 1934, specializing in English language and literature, particularly the work of Coleridge, and German philosophy. He traveled widely in

Europe and received the B.A. (Oxon.) in 1933. He is a member of *Phi Beta Kappa* and Amer. Philosophical Assoc. Prior to joining the faculty of New Jersey State Teachers College in 1937, he was instructor in English and philosophy at Bennington College, Vermont, and teaching fellow in English, German and philosophy at Bowdoin. He is the author of a translation from the German of 'Platonische Renaissance in England und die Schule von Cambridge' by Ernst Cassirer. While in college he spent his summers as member of crews on the racing yacht 'Resolute', former America Cup defender. He and his wife attended the June intensive seminar, IGS, 1939.

Thomas Clark Pollock was born in Illinois, graduated from Muskingum College, B.A., 1922, and went to India where he was professor of philosophy at Gordon College, Punjab University, 1922-24. He received the M.A. from Ohio State University in 1927 and the Ph.D. from Pennsylvania University where he was assistant and resident fellow of the university, 1928-31. Before 1941 when he went to New York University as professor of English education and chairman of the department, he successively was chairman of the humanities division, Municipal University of Omaha; associate professor of English, Ohio State University; and head of the English department, New Jersey State Teachers College at Montclair where he inaugurated a program in semantics and the course for English majors reported on by Mr. Pettegrove in this volume. Doctor Pollock is chairman of the committee to promote research, Nat. Council of Teachers of English; a member of Modern Language Assoc.; *Phi Beta Kappa*, etc. His field of specialization includes literary theory, American literature as well as English education; his principal writings include *The Philadelphia Theatre in the Eighteenth Century* (1933); *Democracy in Transition* (1937) of which he is co-author; *The Teaching of English Grammar in the Secondary Schools of New Jersey* (1937-1938 and 1940); and *The Nature of Literature in Relation to Science, Language and Human Experience*. The latter volume reflects his interest in Korzybski's work.

Allen Walker Read was born in Minnesota, graduated from Iowa State Teachers College

in 1925, received the master's degree from the State University of Iowa the following year, and was awarded the B.Litt. degree in 1933 by Oxford University where he was Rhodes Scholar appointed from Iowa. He was instructor in English, University of Missouri, 1926-1928 and 1931-1932; research associate in English and assistant editor of the *Dictionary of American English*, edited by Sir William Craigie et al., University of Chicago, 1934-1938. He has twice been awarded a Guggenheim fellowship for his work in compiling *A Dictionary of Briticisms*, 1938-1941. Long a careful student of Korzybski's methodology, Mr. Read attended the holiday intensive seminar, IGS, 1941. He was instructor in English, Illinois Institute of Technology, before his induction into the U.S. Army, July, 1942, where he was immediately assigned for work with the Military Intelligence Service, Language Section, Division G-2, War Department General Staff, New York. The work of this section has lately been 'declared' a 'military secret', but quoting from the *New York Times*, August 25, 1942, 'An American Military Definition Dictionary; English-Foreign Military Dictionaries in six languages (German, Russian, Italian, French, Spanish and Portuguese) and Military Phrase Books in some fifty languages are being prepared.' Mr. Read is secretary of the Amer. Dialect Soc., and was chairman (1940, 1941) of the Present-Day English Section, Modern Language Assoc. He is also a member of Amer. Place Name Council; the Philological Soc. (London); Linguistic Soc. of Amer.; Nat. Council of Teachers of English; Nat. Assoc. of Teachers of Speech; Soc. for General Semantics; etc. Among his several dozen articles in scholarly periodicals the following are of particular interest: 'The Motivation of Lindley Murray's Grammatical Work,' *Jour. of English and Germanic Philology*, XXXVIII (Oct., 1939); 'The Spelling Bee: a Linguistic Institution of the American Folk,' *Publications of the Modern Language Assoc.*, LVI (June, 1941); 'The Evidence on "O.K.,"' *The Saturday Review of Literature*, XXIV (July 19, 1941); 'An Obscenity Symbol,' *Amer. Speech*, IX (December, 1934).

Oliver Leslie Reiser received his bachelor's, master's and doctoral degrees from Ohio State University where he also held instruc-

torships in psychology and philosophy before joining the faculty of the University of Pittsburgh where he is now associate professor of philosophy. Dr. Reiser's special interests are centered in epistemology, philosophy of science, logic and ethics, and in these areas he was one of the first to take cognizance of Korzybski's non-aristotelian system, delivering one of the first papers on the implications of the methodology at the A.A.A.S. in December, 1934. He has since treated various aspects of Korzybski's work in his writings, of which the most prominent are his recent books, *The Promise of Scientific Humanism* (1940) and *A New Earth and a New Humanity* (1942). He is also the author of *The Alchemy of Light and Color* (1928), *Humanistic Logic* (1930), and *Philosophy and the Concepts of Modern Science* (1935). In 1940, Dr. Reiser delivered the second annual lectures on general semantics for the Los Angeles Society for General Semantics. Dr. Reiser is a fellow of the A.A.A.S. and a member of the Amer. Philosophical Soc. He is associate editor of *The Humanist*, and a member of the advisory board of *Philosophy of Science*.

Thomas A. C. Rennie, M.D., graduated from the University of Pittsburgh with the B.S. degree in 1924, and from Harvard University Medical School four years later. After his internship at Peter Brent Brigham Hospital, Doctor Rennie was resident in medicine and instructor in medicine at the University of Michigan. He joined the staff of the Henry Phipps Psychiatric Clinic of Johns Hopkins Hospital in 1931, where he was resident psychiatrist and then associate psychiatrist on the senior staff until 1941 when he went to New York as associate professor of psychiatry, Cornell University Medical College, and medical director of the Payne Whitney Psychiatric Clinic, the New York Hospital. Doctor Rennie is a fellow of the Amer. Psychiatric Assoc.; an honorary life-member of the North Pacific Soc. of Neurology and Psychiatry; member of the New York Soc. for Clinical Psychiatry, the New York Psychopathological Soc., and the Medical Soc. of New York State. Among his research publications during the past twelve years, the following are selected as of special interest to the student of general semantics: 'Fluctuations in Dispensary Admissions in Relation

to the Economic Depression,' read before Baltimore Medical Soc., October, 1932 (later quoted in part in the *Congressional Record*); 'Public School Opportunities in the Field of Mental Hygiene,' *Proc. of the Nat. Education Assoc.*, 1935; 'Psychiatric Service to a General Hospital,' *New England Jour. of Medicine*, CCXVII (August 26, 1937); 'Recognition and Management of the Neurotic Patient,' *Medical Clinics of North Amer.* (September, 1937); 'Psychiatric Teaching,' *Contributions Dedicated to Dr. Adolf Meyer* (1937); 'Special Situations and Emergencies, 4th Year Teaching at Hopkins,' *Proc. Fourth Conference on Psychiatric Education*, 1936 (Nat. Com. for Mental Hygiene, 1938); 'Relation of Psychiatry to Internal Medicine,' *Bul. of the Johns Hopkins Hospital*, LXV (September, 1939); 'The Role of Personality in Certain Hypertensive States,' *New England Jour. of Medicine* (1939); 'Follow-up Study of 500 Patients with Schizophrenia Admitted to the Hospital from 1913 to 1923,' *Archives of Neurology and Psychiatry*, XLII (November, 1939); 'Obesity as a Manifestation of Personality Disturbance,' *Diseases of the Nervous System*, I (August, 1940); 'Psychobiological Therapy,' *Amer. Jour. of Psychiatry*, XCVII (November, 1940); 'Analysis of 100 Cases of Schizophrenia with Recovery,' *Archives of Neurology and Psychiatry*, XLVI (August, 1941); 'Hypoglycemia and Tension States,' with J. E. Howard, *Psychosomatic Medicine* (July, 1942). Dr. Rennie was invited to write this paper for the Congress because his close ten-year association with Dr. Adolf Meyer at Johns Hopkins uniquely qualified him to summarize and highlight the contribution of psychobiology, which is fundamentally connected with Korzybski's formulation of non-elementalistic orientations and methodology in his general theory of human evaluation, i.e. general semantics.

Karl Reuning, long a naturalized citizen and a member of the Swarthmore College faculty since 1931, was born in Russelsheim-on-Main, received his training in the field of linguistics and the Ph.D. degree (1912) at the University of Giessen, Germany. Later he studied at the University of Groningen, Netherlands, and in 1923 passed the *examen voor middelbaar onderwijs* at The Hague. Prior to coming to this country he taught

in various secondary schools in Germany, was *oberlehrer* at the German School, Constantinople, Turkey, for three years and professor at Instituut Hommes, Hoogezand, Netherlands. During 1924 to 1926 he was instructor in German at the University of Minnesota and the University of Wisconsin and then professorial lecturer in English at the University of Giessen in 1926-1927, and the University of Breslau, 1927-1930. For the Linguistic Institutes of the Linguistic Soc. of Amer., he taught Turkish at Yale, 1928, and Middle English at College of City of New York, 1930. Professor Reuning is author of numerous articles and reviews in periodicals and of the following works: 'Das Altortümliche im Wortschatz der Spenser-Nachahmungen des 18. Jhs.', *Quellen und Forschungen*, Strassbourg, XV (1912); *The Shepherd's Tale of the Powder Plot* (Breslau, 1928); co-editor and author of the series: *Germany, Past and Present* (6 vols.; New York, 1937); *Cordon Word Book* (New York, 1938). His *Joy and Freude*, of which he gave a preview in his Congress paper, was published by Swarthmore College in the autumn of 1941. He spends his summers in the Maine woods; his hobbies are carpentry and woodworking. He is a member of the Linguistic Soc. of Amer.; Amer. Oriental Soc.; Oriental Club of Philadelphia; German-American League for Culture; and Loyal Americans of German Descent.

J. Barkley Rosser graduated in 1929 with the B.S. degree from the University of Florida where he also received the M.S. in 1931, followed by the Ph.D. in 1934 from Princeton University. He was Proctor fellow at Princeton, 1933-1935; National Research fellow at Harvard University, 1935-1936; then joined the mathematics faculty of Cornell University where he is now associate professor. He is a contributing editor of the *Journal of Symbolic Logic*, and is well known for his work in mathematical logic, the foundations of mathematics, and the theory of prime numbers. He is the author of many papers published in professional periodicals; see the historical bibliographical remarks at the end of his 'On the Many-valued Logics' in this volume.

Hartwell Eugene Scarbrough was graduated from the University of Redlands in

1936, and received the M.A. and Ph.D. degrees from the State University of Iowa where he specialized in clinical psychology, speech pathology, and applications of general semantics under the direction of Professor Wendell Johnson. He attended the August intensive seminar, IGS, 1939, and the 1942 seminar conducted by Korzybski in Los Angeles. Doctor Scarbrough was research assistant in the speech and psychology clinic at the University of Iowa, before returning to Los Angeles, California, where he is now practising as a consulting psychologist in co-operation with various medical specialists. In 1941, he was co-lecturer in a series of lectures on general semantics sponsored by the American Academy of Nutrition and contributed a paper 'General Semantics and Reading' to the Claremont Reading Conference, 1940 (published by Claremont Colleges Library, 1941).

George Lathrop Scott graduated from the Illinois State Normal University with the B.Ed. degree in 1937. He received the M.A. degree at the University of Denver where he studied general semantics and was an assistant in the Speech Correction Clinic. His experience includes the teaching of English and speech arts in various secondary schools, semi-professional work in the theatre and radio, and educational research for the *Encyclopedia Britannica*. He is a member of the national forensic, English, and dramatics fraternities: *Phi Kappa Delta*, *Sigma Tau Delta*, and *Theta Alpha Phi*. At present Mr. Scott is on leave of absence from his position as director of speech arts at the Greeley High School, Greeley, Colorado, and is serving in the U.S.N.R. as a radio technician.

Madeline Semmelmeier received the Ph.B. degree from the University of Wisconsin, and the M.A. from the University of Chicago. Miss Semmelmeier has been on the faculty of De Paul University where she taught courses in analysis of the fields of literature and composition, current methods, materials and practices in teaching English in high schools. In the Chicago public school system prior to her appointment as principal of the Frank W. Reilly School she has been successively head of the English departments at Shurz and Foreman High Schools; assistant principal, Foreman High School;

and supervisor of languages in the Chicago public schools. She has served on twenty-four committees charged with preparing courses of study for the Chicago schools; has acted as chairman of many of these committees, and prepared the material for publication. She also served as chairman of the committee which prepared the present time allotment schedule for the schools. This professional experience in high school teaching and curriculum planning has given Miss Semmelmeier ample opportunities to observe the deficiencies, etc., in the preparation and adjustment of elementary school students who enter the high schools without training in proper evaluation, and this experience greatly enhances the significance of her paper on the use of general semantics methodology towards the prevention of reading difficulties. Miss Semmelmeier first became interested in the possibilities of general semantics in remedying reading difficulties through a chance meeting with the editor in one of W. S. Gray's classes on reading at the University of Chicago shortly after the Institute of General Semantics was founded. She attended two seminars at the IGS, 1938, in the fall and winter, and has since devoted much time to the development of the uses of extensional method in pre-reading education. Most recently she opened a 'semantics laboratory' at the Reilly School. Miss Semmelmeier is co-author of *Know Your Language* (published in 1941 but written before her introduction to general semantics). Some of her papers and articles include: 'Adapting Instruction to the Needs of Poor Readers,' (The Conference on Reading Problems at the Elementary, Secondary, and Junior College Levels, the University of Chicago, 1938); 'Development of American Ideals through American Literature,' *Character and Citizenship*, November, 1939; 'Promoting Readiness for Reading and for Growth in the Interpretation of Meaning,' *Reading and Pupil Development*, compiled and edited by William S. Gray (Proceedings, Third Annual Conference on Reading, University of Chicago, 1940).

Carl Frier Shepard was born in 1893 at Hannibal, Missouri, and educated in Kansas City. He received the D.O. at Northern Illinois College of Optometry in 1912 and subsequently has received many honorary

degrees in the field. He has practiced optometry for thirty years. He is chiefly interested in optometric clinical research, and has been teaching and lecturing on optometric subjects for twenty years. In addition to his practice and teaching at Northern Illinois College, where he is professor of research in optometry, he is now optical consultant for the Beck Lee Corporation, Naval Ordnance Plant at Chicago; consultant on visual classifications tests, etc., for Keystone View Co., Meadville, Penn.; and scientific editor of the *Optometric Weekly*. Hundreds of industries and schools and several branches of the armed services now use tests designed by Doctor Shepard, and his work at the ordnance plant includes designing optical devices for mass production and testing finished instruments, expediting production of lenses, testing employees for visual classification and placement. For the past four years he has been particularly interested in research in techniques for visual adaptation (vision tests and vision training) in industry and schools, and among other projects has cooperated in the Purdue University Industrial Research Project directed by Professor Tiffin. Since the beginning of the war this aspect of his work has had to do with visual rehabilitation for men in military service. He reports that eighty-five per cent of those who took vision training after being rejected because of poor vision without glasses have been made acceptable through this training; twenty-five per cent of the color-blind have been retrained to normal color vision; etc. He is a member of industrial relations committee, Amer. Optometric Assoc.; chairman of ethics and economics committee, Illinois Optometric Assoc.; second vice-president of Chicago Optometric Soc.; member of Optometric Extension Program; *Beta Sigma Kappa* and *Omega Delta*. He is the author of *Stimulus Response Manual* (Optometric Techniques) (1935), *Optometric Science in Practice* (1942), and numerous papers and articles in Optometric publications, and articles on optometry in other publications. He attended the winter evening seminar, IGS, 1941, and is a member of the Soc. for General Semantics.

Virginia Moore Shull graduated in 1930 from George Washington University where

her father is a professor. At Yale University she received the master's degree in 1932 and the Ph.D. in English, 1941. During 1932-1933 she was Henry fellow at Oxford University, and she taught English at George Washington University before joining the faculty of Olivet College. Here instruction and guidance are patterned on the tutorial system characteristic of the individualized education of students at Oxford. This situation afforded her unusual freedom for broad and fundamental applications of general semantics in general education. She is author of 'Clerical Drama in Lincoln Cathedral, 1318-1571,' *Publications of the Modern Language Assoc.*, LII (December, 1937); 'How Iconography Explains Certain Theatrical Documents,' read at the convention of the Amer. Theatre Assoc., December, 1941; and 'Notes on the Semantics of Metaphor' (to be published). Her doctoral thesis 'Stagecraft of Medieval English Drama' was for the most part written during the summers in her favorite medieval town in Flanders. Returning from this retreat in 1939, she had just reached England when the Nazis invaded Poland. In her unabridged paper for the Congress, she makes some interesting analyses of the unsuspected fallacies reflected in the English press during the preliminaries of World War II which she used most effectively in her classes as examples of the usually ignored and unsuspected fallacies involved in the semantic climate of opinion conveyed in even the most factual reporting. Our latest information is that she has temporarily given up teaching to write a book on the teaching of English.

Elsie May Smithies received the bachelor's degree from Lawrence College, Wisconsin, and the master's from the University of Chicago, having specialized in Latin which she still teaches at the high school of the university along with her duties as guidance officer and assistant principal, and instructor in the department of education at the 'downtown' university college. Before joining the university staff some twenty years ago, she taught at the high schools in Stevens Point and Wausau, Wisconsin, and at the high school of the University of Minnesota. Many of her summers have been spent in camps for girls, and she is an expert horsewoman. In 1939 she taught at Mills College during the

summer session, and was introduced to general semantics in the course given by Douglas G. Campbell, M.D. The next summer she was a member of the staff in the Mills College workshop, 'Neuropsychiatry for Teachers,' directed by Doctor Campbell. She attended the autumn, 1939, and the spring, 1940, evening seminars at the IGS, and is a member of the Soc. for General Semantics. Miss Smithies is the author of *Case Studies of Normal Adolescent Girls* and has long been a leading member of the Nat. Assoc. of Deans of Women; the full report of her use of general semantics in group guidance is published in the October, 1942, issue of the association's *Journal*.

Bess Seltzer Sondel has long centered her interests in drama and speech, graduating from the Chicago Musical College with a bachelor's degree in drama, followed by a master's in oratory from the Chicago School of Expression. After her marriage to Herman M. Sondel, M.D., and the birth of her daughter, she entered the University of Chicago, won membership in *Phi Beta Kappa*, received the Ph.B. degree *cum laude* and the Ph.D. in the division of the humanities. In addition to her teaching at the University of Chicago, and in the Extension Division of Indiana University, Doctor Sondel has appeared for many years as a lecture-recitalist in drama. Since she became interested in Korzybski's formulations, she has concentrated on studies in communication and their classroom applications. She attended the holiday intensive seminar, IGS, 1940. She is a member of the Modern Language Assoc., the Soc. for General Semantics, etc., and is now chief of the Speaker's Bureau, Consumers Information, OCD of Chicago.

John Gordon Spaulding was born in Illinois and educated in California where he graduated from Pomona College, B.A., 1929. At the University of California he received the master's degree in English and philosophy, 1939, and is a candidate for the Ph.D. in English, 1943. Before he joined the faculty of Stockton Junior College where he is now associate professor of English, he was teaching assistant in English and then instructor, University Extension, at the University of California, 1931-1938. Long a careful student

of Korzybski's methodology, Mr. Spaulding attended the June intensive seminar, IGS, 1941, and he and Mrs. Spaulding, who is a psychiatrist, were members of the Berkeley seminar group, 1942. He is now completing his doctoral dissertation which is an historical study of the effects which an identity postulate has had on the development of literary theory from the Greek day to the English romantic period. See the extended note printed with his paper in this volume, which also includes Mr. Spaulding's observations on his use of general semantics in the teaching of English and philosophy. He is co-author of examination forms published by the University of California, and editorial assistant, American Council on Education, *Cooperative English Test*. *Test A: Mechanics of Expression*. *Form R*. He is a member of Philological Assoc. of the Pacific Coast; Modern Language Assoc.; Assoc. for Symbolic Logic; and Soc. for General Semantics.

George Salvatore Stevenson, M.D., was born in Philadelphia and spent most of his youth in New Jersey where he still resides. His Alma Mater is Bucknell University, B.S., 1915. In 1919 he received both the M.S. from Bucknell and the M.D. from Johns Hopkins University Medical School, and in 1940 the D.Sc. degree from Bucknell. Prior to his association with the National Committee for Mental Hygiene, 1926, as field consultant, director of the division on community clinics, and medical director since 1939, Dr. Stevenson has been successively interne in the Henry Phipps Psychiatric Clinic of Johns Hopkins Hospital; assistant in neuropathology, New York State Psychiatric Institute; clinical instructor in psychiatry, Cornell Medical School; research psychiatrist, Vineland Training School, New Jersey; assistant professor of psychiatry and director of state clinic, University of Minnesota; attending neurologist and psychiatrist at Minneapolis General Hospital. His writings in the fields of neuropsychiatry, mental hygiene, child-care, education, community organization and social work, too numerous to list here, are available in the standard bibliographies in these fields. Dr. Stevenson is a fellow of the Amer. Medical Assoc.; a former president and secretary-treasurer of the Amer. Orthopsychiatric Assoc.; and

chairman of the New York City Committee for Mental Hygiene of the State Charities Aid Assoc. He is also a member of the Amer. Psychiatric Assoc.; Minnesota Neurological Soc.; Central Neuropsychiatric Assoc.; Amer. Assoc. on Mental Deficiency; Soc. for Research in Child Development (executive board); Nat. Conference of Social Work (executive committee); Nat. Congress of Parents and Teachers. Dr. Stevenson is one of the original honorary trustees of the Institute of General Semantics and attended a special IGS seminar in 1939.

Curtis E. Tuthill was graduated from Macalester College in 1935 and received the master's degree and the Ph.D. in psychology from the State University of Iowa where he was research assistant to Professor Wendell Johnson for two years. He attended the August intensive seminar, IGS, 1939, and has been instructor in psychology and director of the Speech Clinic at Temple University since September of that year. In 1940 he married Dorothy Davis, Ph.D., who also did research in the speech field at the University of Iowa. At Iowa he was particularly interested in empirical and quantitative approaches to the problem of 'meaning'; his dissertation from which his Congress paper is principally derived, is understood to be 'the first doctor's thesis in psychology and speech strictly in the field of general semantics.' Of related interest is his short paper, 'An Analysis of the Implications of the Word "Intelligence",' *Iowa Academy of Science*, XLV (1938). Dr. Tuthill is a member of *Sigma Xi*; Amer. Psychological Assoc.; Amer. Speech Correction Assoc.; Amer. Assoc. of Applied Psychology; A.A.U.P.; A.A.A.S.; and International Council for Exceptional Children.

Dorothy Davis Tuthill majored in mathematics and speech at the University of Michigan and graduated with the B.A. in 1933. She specialized in child psychology and speech correction at the University of Iowa where she worked with Professor Wendell Johnson. At Iowa she was research assistant in speech pathology, clinician in charge of articulatory disorders, and lecturer in speech pathology, receiving the M.A., 1936, and the Ph.D. in child psychology,

1939. Before she went to Brooklyn College as instructor in speech, she had been teacher of mathematics, St. Louis High School; supervisor of speech correction in the public schools of Eau Claire, Wisconsin; and assistant director of the speech and reading clinic, Indiana State Teachers College, Terre Haute. She is the co-author with Wendell Johnson of 'Dextrality Quotients of Seven-Year-Olds in Terms of Hand Usage,' *Jour. of Educational Psychology*, XXVIII (1937), 'Practical Speech Correction in the Public Schools,' *Elementary School Jour.*, XXXVII (1937), and others. A detailed report of her doctoral dissertation, 'The Relation of Repetitions in the Speech of Young Children to Certain Measures of Language Maturity and Situational Factors,' was published in *Jour. of Speech Disorders*, IV (1939) and V (1940). She is a fellow of the Amer. Speech Correction Assoc.; and a member of *Sigma Xi*; *Delta Sigma Rho*; *Zeta Phi Eta*; *Pi Lambda Theta*; and *Phi Kappa Phi*. She studied general semantics with Professor Johnson, and attended the August intensive seminar, IGS, 1939. In 1940 she married Curtis E. Tuthill.

A. Ranger Tyler was born in New Jersey and graduated from Rutgers University, B.A., 1926, having majored in biological sciences and Greek. He has been successively a teacher at the Gunnery School, Connecticut; editor of the *Plattsburgh (N.Y.) Republican*; copy editor and book reviewer on the *Knickerbocker News*, Albany; and at present is editorial assistant, State Education Department, University of the State of New York. His interest in general semantics dates from his reviewing the first edition of *Science and Sanity* and his subsequent paper for the First Congress on General Semantics, 'The Place of General Semantics in Journalism.' He is a member of the Soc. for General Semantics.

Marian Van Tuyl graduated from the University of Michigan with the B.S. degree in 1928. During the next ten years she was instructor in the dance and physical education at the University of Chicago and became well known as a concert dancer and choreographer with her own concert company. In 1938 she was appointed assistant professor of dance at Mills College and in

1940 married Douglas G. Campbell, M.D., when he joined the faculty of the University of California Medical School. She has long been a student of Korzybski's work, attending one of his early seminars in 1935, as well as the IGS seminar conducted at Berkeley, California, in the spring of 1942.

Frank Louis Verwiebe graduated from Cornell University in 1920 with the M.E. degree. Between 1921 and 1930 he did graduate work at the University of Chicago, taught physics at eastern high schools and middle-western colleges, and traveled in Europe for two years. From 1930 to 1934 he was assistant in the Physics Department at the University of Chicago where he received the M.S. and Ph.D. degrees. Since then with the exception of one year on-leave at Vanderbilt University he has been assistant professor of physics at Eastern Illinois State Teachers College. He is now (1942) on leave at the University of Chicago and is research associate in the Army Institute, an educational branch of the U. S. Army Service of Supply, division of special services. The function of the Institute is to prepare and conduct self-teaching courses for the enlisted personnel in any of the services, ranging from sixth grade to graduate college courses, including examinations and certificates of appraisal to aid students in obtaining high school and college credits. About ten thousand students are now taking these courses and over a million are expected during the demobilization period. In 1938 Doctor Verwiebe attended the first seminar given at the IGS. He is a member of the Amer. Physical Soc.; Amer. Assoc. of Physics Teachers; Illinois Academy of Science; A.A.A.S.; and has written a number of articles, among them, 'Radiation from Hydrogen Canal Rays,' *Physics Review* (1933); 'Thermodynamic Surfaces,' *Amer. Physics Teacher* (1935); 'Allotropic Forms of Ice,' *Amer. Physics Jour.* (1939); and 'Baseball Curves,' *Amer. Physics Jour.* (1942).

Michael J. Walsh was born in Ireland and studied at the University of Dublin where he specialized in organic chemistry and biochemistry and received the B.Sc. and M.Sc. in 1914 and 1915. He then continued his work in organic chemistry at the Institute of Chemistry, London, of which he is an

associate (1917) and fellow (1923), the A.I.C. and F.I.C. being the British equivalents of the Ph.D. and D.Sc. for research in this country. He is an active member of the Amer. Institute of Chemical Engineers, and of the Amer. Academy of Applied Nutrition. He has been successively lecturer in biochemistry, University of Dublin, 1913-1915; chief chemist and director of research (chemical warfare), Nobel's Explosive Co., Scotland, 1915-1919; managing director and director of research (pharmaceutical chemicals), Fine Chemicals, Ltd., Dublin, 1919-1921; research chemist and director of research, F. N. Pickett et Fils, France, 1921-1925; director of research, technical director and vice-president, Thornley & Co., England and San Diego, California, 1925-1932. Since 1932 he has manufactured dietary supplements at his own laboratories in San Diego, holds numerous U. S. patents and is well known as a consulting nutritionist to the medical and dental professions. Since 1937, he has been instructor in the University of California, extension division, giving courses for dieticians, public health and personnel workers, and teachers of home-economics; and instructor in applied nutrition in the division of educational courses, Southern California State Dental Assoc. He is the author of many technical and research papers, the earliest appearing in the *Proceedings of the Royal Irish Academy*, 1915 and 1916. Of special interest in connection with his paper in this volume are 'Dental Caries, A Review of the Literature,' *Proceedings of the Amer. Academy of Applied Nutrition* (1938); 'Modern Concepts of Energy,' *Proceedings of the Amer. Academy of Applied Nutrition* (1939); 'What Nutrition Means to Dentistry,' *Jour. of Southern California State Dental Assoc.*, IV (October, 1937); and 'The Educational Aspects of Nutrition Applied to Dentistry,' presented to the 43rd Session, Southern California State Dental Assoc., 1940, and published in the *Journal* of the association for June, 1941, in which paper he expounds the implications of general semantics for modern professional education. Long interested in Korzybski's work, he was a member of the Mills College workshop, 'Neuropsychiatry for Teachers,' conducted by Doctor Campbell in the summer of 1940, and various other lecture courses in Los Angeles. In February, 1942,

he attended the IGS seminar conducted by Korzybski in Los Angeles.

George Chychele Waterston was born in England, attended King's College School, London, before he went to Hertford College, Oxford University where he specialized in modern languages and graduated with the B.A. (Oxon.) degree in 1927. The next year he spent at Heidelberg University studying German. In 1941 he received the M.A. degree from Middlebury College, Vermont. He was at the University of Paris, 1938-1939, and completed the work for the doctorate in semantics; *Une Étude Sémantique du Mot Order*, his thesis, scheduled for publication by Droz, Paris, in 1940, was interrupted by the war as was the awarding of the degree. Mr. Waterston has been a student of semantics and general semantics since the early thirties; as he puts it, 'the contrast between pre-war England and post-war England, between England and France, England and Germany, Europe and the United States, made semantic problems acute for me.' His interest in the semantics of *order* was largely derived from his study of Korzybski's work in which it is a key term. His first contact with the Institute was occasioned by his article on the use of general semantics in education, 'Correlation vs. Ideologies' which appeared in *The Archbishop*, parent-teacher-alumni magazine of the Brooks School, in 1937. He attended the June intensive seminar, IGS, 1940. Before joining the staff of Brooks School, North Andover, Massachusetts, where he teaches modern languages as well as English literature, he was a reader at the Oxford University Press, New York, and at Brewer, Warren and Putnam. He translated *Twelve Secrets of the Caucasus*, by Essad Bey (Viking, 1931), and is a member of the Modern Language Assoc.

Luther Whiteman attended Stanford University and the University of California where he specialized in economics, English, and journalism. For some years he was in charge of educational and publicity work for the U. S. Forest Service in California. For the most part he has worked independently in writing, advertising, publicity, and publishing in Chicago and Detroit as well as California. He is at present public re-

lations counsel for the Wine Institute and lives in Los Angeles. His personal interest and avocation is monetary reform; he is well known in California as a speaker and writer on the subject, and is one of the founders of the 'social credit' movement on the coast. He has contributed articles to *New Democracy* and *Dynamic America*, and many other special and national periodicals. He is co-author with Samuel Lewis of *Glory Roads* (Crowell), a discussion of the many economic reform movements of California. He had been interested in general semantics for some time when he attended Korzybski's 1939 lecture course in Los Angeles, and has been a member of the Los Angeles Soc. for General Semantics since it was organized.

Benjamin Lee Whorf, of Wetherfield, Conn., authority on ancient Mayan and Aztec civilizations, was born in Winthrop, Mass., in 1897. He was graduated from the Massachusetts Institute of Technology with the B.S. degree in 1918, joined the Hartford Fire Insurance Company in 1919, and was assistant secretary of the company at the time of his death, July 26, 1941.

Mr. Whorf began his study of the Aztec and Mayan languages in 1925, as a hobby, in the Watkinson Library in Hartford and after five years of spare-time work he went in 1930 to the Pueblo villages of central Mexico for a study of the languages of the people as they are spoken today. At the time he lived in the homes of the descendants of the old civilizations and transcribed folk songs, legends and poems of the people. For this purpose, Mr. Whorf received a grant-in-aid from the Social Research Council of New York. Colleges and museums from all parts of the country sent material to Mr. Whorf for translation. He first became known as a student of Aztec when he read an original translation of Aztec records before the International Congress of Americanists in New York in 1928. Mr. Whorf was also an authority on Hopi. He spent some time in Arizona working with the Hopi Indians and was compiling a Hopi dictionary at the time of his death. In May, 1940, Sumner Welles, undersecretary of state, appointed him a delegate to the Eighth American Scientific Congress, where he read a paper on means of deciphering hieroglyphs. He was named an honorary

fellow at Yale University in 1936, received the Sterling Fellowship from Yale in 1937 and was elected a faculty and research fellow by the Yale Chapter of *Sigma Xi*, national honorary scientific fraternity. He was a member of the Hartford Fire Prevention Commission; Hartford Chamber of Commerce; Linguistic Soc. of Amer.; American Anthropological Assoc.; and *Sigma Xi*. In World War I he served as a private in the engineering corps, U.S.A.R. Mr. Whorf contributed many papers on American Indian languages to scientific journals; contributed articles on linguistics to the *Technology Review*; and was author of *Phonetic Value of Certain Characters in Maya Writing*. A more complete biography with bibliography will be found in the *Nat. Cyclopaedia of Amer. Biography* (James T. White Co.).

Henry Nelson Wieman was born in Missouri and received his B.A. from Park College, the same Missouri institution which honored him with the D.D. twenty years later. Meantime he studied at Jenna and Heidelberg and received the Ph.D. from Harvard University in 1917. In 1928 he received the Litt.D. from Occidental College where he was professor of philosophy for ten years prior to joining the divinity school staff of the University of Chicago as professor of philosophy of religion, 1927—. Professor Wieman delivered the Taylor lectures at Yale, 1930, and other series at various universities. He is the author of some ten volumes, among them *Normative Psychology of Religion* (with Regina Westcott Wieman, whom he married in 1932); *Growth of Religion* (1938); and *Now We Must Choose* (1941) on the subject of democracy. He is a member of the Amer. Philosophical Assoc., Amer. Theological Assoc., A.A.U.P., etc. He attended the holiday intensive seminar, IGS, 1940.

Regina Westcott Wieman spent her early life in southern California, graduated from Occidental College with the B.A. degree in 1918, and specialized in psychology at the University of California at Berkeley where she received the master's degree and the doctorate in education in 1921 and 1923. She was successively instructor, Occidental College; dean of women, Santa Barbara State Teachers College; acting director and

dean, Garland School of Homemaking at Boston; on the extension staff of the University of California at Los Angeles and director of the community project in family education, Alhambra, California. Since 1926 she has been in private practice as a consulting psychologist in the field of individual and family adjustment in California and at Chicago, and is well known for her work in group counseling on many college and university campuses. In 1941, she organized the Family Community Project of Addison, Michigan, and is now devoting most of her time to this experiment as director of the project, which is '(1) an effort to make practically available to the population of a community the principles and techniques developed by leaders which are effective in increasing the soundness and values of living, and hence the joys and satisfactions and (2) a field opportunity where undergraduate and graduate students

can secure actual experience in this type of community and family building.' Doctor Wieman is a member of the editorial board of *The American Family*; and a member of the Amer. Psychological Assoc.; Amer. Assoc. for Applied Psychology; Soc. for the Psychological Study of Social Issues; Nat. Council of Women Psychologists; Nat. Assoc. for Family Living; Religious Education Assoc. She is co-author with her husband, Professor Henry N. Wieman, of *Normative Psychology of Religion* (Crowell, 1935); and author of *The Modern Family and the Church* (Harpers, 1937); *The Family Lives Its Religion* (Harpers, 1941); *Obedience and Growth* (Harpers, in press); and many articles and reviews in professional and general periodicals. Long interested in Korzybski's work, she attended the August intensive, IGS, 1940, and since has adapted general semantics to her own techniques of psychotherapy and guidance.



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THE PROGRAM
SECOND AMERICAN CONGRESS ON GENERAL SEMANTICS
UNIVERSITY OF DENVER
AUGUST 1941

SECOND AMERICAN CONGRESS ON GENERAL SEMANTICS

THE UNIVERSITY OF DENVER, DENVER, COLORADO
August First and Second, 1941



Central Theme of the Program:

GENERAL SEMANTICS AND METHODOLOGICAL FOUNDATIONS FOR CULTURAL INTEGRATION IN OUR TIME

. . . *For the first time in the history of humanity a disintegrating civilization is capable of discerning the causes of its decay. For the first time it has at its disposal the gigantic strength of science. Will we utilize this knowledge and power? It is our only hope of escaping the fate common to all civilizations of the past. Our destiny is in our own hands.*

—ALEXIS CARREL, *Man the Unknown*.

The prevalent and constantly increasing general deterioration of human values is an unavoidable consequence of the crippling misuse of neuro-linguistic and neuro-semantic mechanisms. In general semantics we are concerned with the sanity of the race, including particularly methods of prevention; eliminating from home, elementary, and higher education inadequate aristotelian types of evaluation which too often lead to the un-sanity of the race, and are building up for the first time a positive theory of sanity, as a workable non-aristotelian system. The task ahead is gigantic if we are to avoid more personal, national, and even international tragedies based on unpredictability, insecurity, fears, anxieties, etc., which are steadily disintegrating the functioning of the human nervous system. Only when we face these facts fearlessly and intelligently may we save for future civilizations whatever there is left to save, and build from the ruins of a dying epoch a new and saner society. . . . A non-aristotelian re-orientation is inevitable; the only problem today is when, and at what cost.

—ALFRED KORZYBSKI, *Science and Sanity; An Introduction to Non-aristotelian Systems and General Semantics (2nd Edition, 1941)*.

THE UNIVERSITY OF DENVER extends a cordial invitation to educators and physicians and to all others interested in the problems indicated in this program to attend the Second American Congress On General Semantics.

THE WORK OF THE CONGRESS will stress the possibilities of a new general methodology of evaluation as foundation for cultural integration in our time. In the three general sessions, addresses by Korzybski and other speakers will deal with problems of reconstruction and indicate the broad educational implications of the new methodology for neuro-social integration without regimentation in a democratic society. The papers on applications of General Semantics and related subjects presented in sectional meetings covering the various fields of education, psychosomatic therapy and other human affairs, will serve to demonstrate the generality and workability of the methodology and to indicate the possibilities of its further applications.



THE WORLD CRISIS outbalanced the time handicaps which the organizers accepted in their decision to hold the Congress this summer. There were less than three months for preparation. Coming as it did at the most crowded period of the academic year as well as at the time when physicians and psychiatrists were taking on extra burdens in connection with Selective Service, the preparation of this program offered unusual difficulties. The organizers are deeply grateful to the contributors who so generously undertook to prepare papers on such short notice under adverse conditions.



GENERAL SEMANTICS as formulated by Korzybski represents a new branch of empirical natural science, underlying a general theory of human evaluations and orientations. This general theory of evaluation with its natural science bases and methodology was first presented as a non-aristotelian system by Korzybski in 1933, in his *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* (Science Press Printing Company, Lancaster, Pa.)

General Semantics as a natural science is concerned with the linguistic and semantic mechanisms which function in human nervous systems to condition our knowledge, activities and adjustments in life. As a systematic methodology with techniques controlling language-fact relations towards proper evaluation, it is generally applicable in the various specialized fields of scholarship and scientific investigation, the professions, general education and psychotherapy, public affairs, personal life, etc.

During the past year Korzybski has written a new Introduction for the second edition of *Science and Sanity* (now in press) dealing with the fundamental neuro-evaluational factors in our disintegrating culture and the techniques now available for their control. In this Introduction Korzybski makes the following statements:

“ . . . General semantics is not any ‘philosophy’ or ‘psychology,’ or ‘logic,’ in the ordinary sense. It is a new extensional discipline which explains and trains us how to use our nervous systems most efficiently. It is not a medical science, but like bacteriology, it [becomes] indispensable for medicine in general, and for psychiatry, mental hygiene, and education in particular. In brief, it is the formulation of a new non-aristotelian system of orientation which affects every branch of science and life. The separate issues involved are not entirely new; their methodological formulation *as a system* which is workable, teachable and so elementary that it can be applied by children, is entirely new . . . The aim of the work of Aristotle and the work of the non-aristotelians is similar, except for the date of our human development and the advance of science. The problem is whether we shall deal with science and scientific methods of 350 B.C. or of 1941 A.C. In general semantics, in building up a non-aristotelian system, the aims of Aristotle are preserved, yet scientific methods are brought up to date.”

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Program

CENTRAL THEME : *General Semantics and Methodological Foundations for Cultural Integration in our Time*

FRIDAY, AUGUST FIRST

8:30 a. m.

REGISTRATION, Foyer, Margery Reed Mayo Hall

9:30 a. m.

FIRST SESSION

OPENING OF THE CONGRESS Little Theatre, Mayo Hall
Presiding: DR. ELWOOD MURRAY, General Chairman of the Congress

ADDRESS OF WELCOME

CHANCELLOR CALEB F. GATES, JR., Honorary President of the Congress

INTRODUCTIONS AND SHORT ADDRESSES

FRANKLIN G. EBAUGH, M. D., President of the Congress

ALFRED KORZYBSKI, Author of *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics*

ADOLF MEYER, M. D., Johns Hopkins Hospital

M. KENDIG, General Secretary of the Congress

INTRODUCTORY PAPERS ON METHODOLOGICAL FOUNDATIONS FOR CULTURAL INTEGRATION

"Historical-Cultural Significance of Non-Aristotelian Movement and Methodological Contribution of Korzybski," OLIVER L. REISER, Associate Professor of Philosophy, University of Pittsburgh

"The Neuro-linguistic and Neuro-semantic Mechanisms of Disintegration and Their Control:"

- a. "Mechanisms of Social Pathology: Prejudice, Conflict and Cultural Lag," IRVING J. LEE, Chairman of Speech Division, University College, Northwestern University
- b. "Mechanisms of Personal Maladjustment," C. B. CONGDON, M. D., Psychiatrist, Student Health Service, University of Chicago
- c. "Neurological Bases of General Semantics and Integration," DOUGLAS GORDON CAMPBELL, M. D., University of California Medical School

"Time-binding: Empirical Foundations for Ethics," S. I. HAYAKAWA, Assistant Professor of English, Armour College, Illinois Institute of Technology

12:15 p. m.

LUNCHEON AND DISCUSSIONS Student Union

FRIDAY, 2:00 p. m.

SECOND SESSION

GENERAL MEETING Little Theatre, Mayo Hall
Chairman: DR. IRVING J. LEE, Northwestern University

INTRODUCTORY PAPERS ON METHODOLOGICAL FOUNDATIONS FOR CULTURAL INTEGRATION

Continued from morning session—see above

FRIDAY, 3 :00 p. m.

SECTIONAL MEETINGS See Schedule

Sectional meetings are scheduled in fourteen groups for Friday afternoon, Saturday morning and afternoon. **Six** to eight papers will be presented and discussed in each group. In general, the papers are grouped together for presentation in sequences following the broad classifications given below.

- I. Psychosomatic Problems: Neuro-linguistic and Neuro-semantic Issues in General Medicine, Neuropsychiatry, Mental Hygiene and Related Specialties
Chairmen in charge of Section I: RAYMOND W. McNEALY, M. D., Northwestern University Medical School, and DOUGLAS G. CAMPBELL, M. D., University of California Medical School.
- II. Problems in Education: Neuro-linguistic and Neuro-semantic Issues in Scholarship, Teaching, Guidance, Remediation, Research, Etc.
Chairmen in charge of Section II: M. KENDIG, Institute of General Semantics and DR. S. I. HAYAKAWA, Illinois Institute of Technology
- III. Problems in Speech and Speech Arts: Neuro-linguistic and Neuro-semantic Issues in Teaching, Pathology, Therapy, Research, Etc.
Chairmen in Charge of Section III: DR. WENDELL JOHNSON, University of Iowa and DR. ELWOOD MURRAY, University of Denver
- IV. Problems in Public Affairs: Neuro-linguistic and Neuro-semantic Issues in Journalism, Finance, Law, Social Work, Etc.
Chairman in charge of Section IV: LEO LERNER, Editor; President, Citizens' School Committee of Chicago; Board of Directors, Chicago Public Library

For detailed programs of sectional meetings by groups, lists of papers and places of meeting, see schedule of Sectional Meetings, pages six to twelve.

6:15 p. m.

DINNER AND DISCUSSIONS Student Union

FRIDAY, 7 :45 p. m.

THIRD SESSION

GENERAL MEETING Little Theatre, Mayo Hall

Chairman: RAYMOND W. McNEALY, M. D., Northwestern University Medical School

Address by ALFRED KORZYBSKI

"Non-aristotelian Methodology; Neuro-linguistic and Neuro-semantic Factors in a Disintegrating Culture"

SATURDAY, AUGUST SECOND

9:00 a. m.

FOURTH SESSION

GENERAL MEETING Little Theatre, Mayo Hall

Chairman: DR. IRVING J. LEE, Northwestern University

"Implications of General Semantics in Medical Education and in Daily Life,"

RAYMOND W. McNEALY, M. D., Professor of Surgery, Northwestern University Medical School; Chief Surgeon, Wesley Memorial Hospital; President of Staff, Cook County Hospital, Chicago

"Mechanisms of Magic and Self-Deception. The Psycho-logical Basis of Misdirection: An Extensional Non-aristotelian Method of Prevention,"

DOUGLAS McG. KELLEY, M. D., Rockefeller Fellow in Psychiatry, New York Psychiatric Institute and Hospital

"Science—The Modern Totem Pole," HUGH G. LIEBER, Head of Mathematics Department, Long Island University and LILLIAN R. LIEBER, Director of The Galois Institute of Mathematics

SATURDAY, 10:30 a. m.

SECTIONAL MEETINGS .

See Schedule

Detailed programs of sectional meetings, lists of papers and places of meeting are scheduled on pages six to twelve. See statement about sections on page five.

12:30 p. m.

LUNCHEON AND DISCUSSIONS .

. Student Union

SATURDAY, 2: 15 p. m.

FIFTH SESSION

SECTIONAL MEETINGS See Schedule

Detailed programs of sectional meetings, lists of papers and places of meeting, are scheduled on pages six to twelve. See statement about sections on page five.

6:15 p. m.

BANQUET (Informal) .

. Student Union

Presiding: FRANKLIN EBAUGH, M. D., Medical Director, Colorado Psychopathic Hospital, University of Colorado

Summaries of the Work of the Sections by the Chairmen

SATURDAY, 8:00 p. m.

FINAL SESSION

GENERAL MEETING Little Theatre, Mayo Hall

Chairman: DR. ELWOOD MURRAY, University of Denver

Address by ALFRED KORZYBSKI

"Non-aristotelian Orientations: Neuro-social Integration without Regimentation"

CLOSING OF THE CONGRESS

FRANKLIN EBAUGH, M. D., President of the Congress

DR. ELWOOD MURRAY, General Chairman of the Congress.

SUNDAY, 10:30 A. M.

Post Congress Discussion Groups will be arranged by chairmen in charge of the sectional meetings. The organization and number of such groups will depend on the wishes of those attending the Congress.

SCHEDULE OF SECTIONAL MEETINGS

Sectional meetings are scheduled in groups for presentation of papers in sequences following the broad classifications indicated in the general program, page 5, where the chairmen in charge of the group sequences are also listed. Chairmen for group meetings will be posted on the Congress bulletin board.

All sections will meet in the rooms of Margery Reed Mayo Hall unless otherwise stated.

SECTION I a.

FRIDAY, 3:00 p. m., Room 20

"Psychobiology and General Semantics: A Discussion," ADOLF MEYER, M.D., Psychiatrist-in-Chief, Johns Hopkins Hospital.

"Psychobiology: Foundation of Therapy and Prevention," THOMAS A. C. RENNIE, M.D., The Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital.

"Semantic Dementia and Semi-Suicide: The Mask of Sanity," (A Reinterpretation of the So-called Psychopathic Personality), HERVEY CLECKLEY, M.D., Professor of Neuropsychiatry, University of Georgia School of Medicine (author of *The Mask of Sanity*, Mosby, 1941).

"General Semantics and the Problem of Rapport in Psychiatry," JOHN G. MERRINGER, M.D., Psychiatrist, Psychiatric Institute, Illinois Research Hospital, Chicago.

"General Semantics in the Practice of Internal Medicine," EVERETT W. DELONG, M. D., Los Angeles.

SECTION II a and SECTION III a. (*Joint Meeting*)

FRIDAY, 3:00 p. m., Little Theatre

"A Theory of Meaning Analyzed: A Critique of I. A. Richards' Theory of Language," THOMAS C. POLLOCK, Chairman of the Department of English Education, New York University.

"Elementalism: The Effect of an Implicit Postulate of Identity on I. A. Richards' Theory of Poetic Value," JOHN GORDON SPAULDING, Assistant Professor of English, and Teacher of Remedial English, Stockton Junior College, California.

"Languages and Logic: Chemical Compound or Mechanical Mixture, a Sentence Hides Within Its Structure Laws of Thought," BENJAMIN LEE WHORF, Anthropologist and Engineer, Hartford, Connecticut.

"The Lexicographer and General Semantics, with a Plan for a *Semantic Dictionary of Current English*," ALLEN WALKER READ, formerly Assistant Editor, *A Dictionary of American English*; now Editor, *A Dictionary of Briticisms*: Guggenheim Fellow, 1938-1940.

"Joy and Freude; A Comparative Study of the Linguistic Field of Pleasurable Emotions in English and German," KARL REUNING, Professor of German, Swarthmore College.

"An Application of General Semantics to Dictionary Technique in a Dictionary of Education," MAJOR HENRY D. RINSLAND, Adjutant General's Office, War Department; Professor of Education, and Director of the Bureau of Educational Research, University of Oklahoma.

SECTION II b.

FRIDAY, 3:00 p. m., Room 39

"Evaluation of the Application of General Semantics Methodology in a Reading Readiness Program: Report on a Three-Year Project," MADELINE SEMMELMEYER, Principal of the Reilly Elementary School, Chicago.

"General Semantics in the Group Guidance of Young Adolescents; A Preliminary Statement," ELSIE SMITHIES, Assistant Principal, University of Chicago High School.

"General Semantics and Reading Instruction," DAVID KOPEL, Associate Professor of Psychology and Education, Chicago Teachers College.

"Re-Education in Reading: Application of General Semantics in Remedial Work," O. R. BONTRAGER, Assistant Director of Teacher Training and Director of the Reading Clinic, State Teachers College, California, Pennsylvania.

"General Semantics in Vision and Visual Research," CARL F. SHEPARD, Department of Research, Northern Illinois College of Optometry, Chicago.

"Continuation Report on Work with Ungraded Children," HAROLD M. POTTS, Elementary Supervisor, Public Schools, Olympia, Washington.

"Semantics Analysis of the Writings of Children in the Elementary Grades: Report on a Nation-wide Project," MAJOR HENRY D. RINSLAND, Adjutant General's Office, War Department; Professor of Education and Director of the Bureau of Educational Research, University of Oklahoma.

SECTION III b.

FRIDAY, 3:30 p. m., Room 38

- "Studies of Stuttering from the Viewpoint of General Semantics," WENDELL JOHNSON, Associate Professor of Psychology and Speech Pathology, University of Iowa.
- "A Quantitative Study of Extensional Agreement with Special Reference to 'Stuttering'," CURTIS E. TUTHILL, Instructor in Psychology, Temple University.
- "Implications Regarding Onset of Stuttering in Children," DOROTHY DAVIS TUTHILL, Speech Department, Brooklyn College.
- "A Semantic Analysis of Certain Data Concerning the Loci of Stuttering Spasms," SPENCER BROWN, Instructor in Speech, University of Minnesota.
- "Progress Report on Research in Speech Behavior from the Viewpoint of General Semantics," WENDELL JOHNSON, Associate Professor of Psychology and Speech Pathology, University of Iowa.

SECTION IV.

FRIDAY, 3:00 p. m., Renaissance Room, Mary Reed Library

- "Practical Applications of General Semantics to Journalism," LEO A. LERNER, Managing Editor, *Lincoln-Belmont Booster*; President of the Citizens' School Committee; Board of Directors, Public Library, Chicago.
- "Newspapers, Education and General Semantics," (Gallup Polls, Comics, etc.) A. RANGER TYLER, New York State Department of Education, Albany.
- "Notes on the Construction of Chaos: An Extensional Analysis of Journalism," EDWIN GREEN, Assistant to the Editor, *Daily News*, Los Angeles.
- "A Semantic Analysis of the Broadcasting of Five Radio News Commentators," WILLIAM WILLIAMS, Speech Department, University of Denver.
- "Verbalizations in Finance: An Extensional Analysis," LUTHER WHITEMEN, author and Public Relations Counsel, San Francisco and Los Angeles.
- "Personal Applications of General Semantics in the Motion Picture Industry," ROBERT LORD, Producer for Warner Brothers.
- "General Semantics and the Law," JOHN ADAMS WICKHAM, Attorney, New York.

SATURDAY, AUGUST SECOND

9:00 a. m.

FOURTH SESSION

GENERAL MEETING Little Theatre, Mayo Hall
Please see page 5 for list of papers.

SECTION I b.

SATURDAY, 10:30 a. m., Room 20

- "'Genius' and 'Fatigue': Some Neglected Factors in the Personality-Cultural Complex; An Expanded Formulation of Environment," WILLIAM F. PETERSEN, M. D., Professor of Pathology, University of Illinois Medical School (author of *The Patient and the Weather*).
- "Some Fundamental Errors of Medical Science: Case Study of an Overgeneralization," W. BURRIDGE, M.D., Principal, King George's Medical College, Lucknow, India (author of *Excitability—A Cardiac Study*, *A New Physiological Psychology*).
- "The Use of General Semantics in Psychiatry," DOUGLAS GORDON CAMPBELL, M.D., Psychiatrist, University of California Medical School; Consulting Psychiatrist, Mills College.

"General Semantics and The Rorschach Tests," WILLIAM H. PEMBERTON, Clinical Psychologist, San Francisco.

"General Semantics Applied to Nutrition," MICHAEL J. WALSH, Consulting Nutritionist, San Diego, California.

"Semantogenesis and Control of Dental Caries: The Electro-Colloidal Mechanisms," LOUIS G. BARRETT, D.M.D., Hanover, New Hampshire; Lecturer, 1941-42, Harvard School of Dental Medicine.

"Caries and Psychic Trauma: A Summary of Findings," E. F. BRIGGS, D.D.S., Bangor, Maine.

"Unconscious Assumptions in Educational Research: How the Structure of Language Introduces Some Fundamental Fallacies Which Block Understanding," M. KENDIG, Educational Director, Institute of General Semantics, Chicago.

SECTION I c.

SATURDAY, 2: 15 p. m., Room 20

"Extensional Methods of General Semantics Used to Teach Techniques for Harmonious Mating," HILDRETH CALDWELL, M. D., Obstetrician and Counselor in Family Relationships, Los Angeles.

"Implications and Applications of General Semantics in the Practice of Medicine," THOMAS A. ANGLAND, M. D., Yakima, Washington.

"General Semantics in the Practice of Consulting Psychology," H. E. SCARBROUGH, Ph.D., Consulting Psychologist, Los Angeles.

"Dispelling 'Emotional' Crises Through Extensionalization," REGINA W. WIEMAN, Ed.D., Consulting Psychologist in Individual and Family Adjustment, and Lecturer, Chicago.

"A Study of Tension in Relation to Breakdown," MAGDA B. ARNOLD, Department of Psychology, University of Toronto.

"The Use of General Semantics Techniques in Physiotherapy," MAY WATROUS NILES, Chief Physical Therapist, Syracuse Department of Health and The Syracuse Free Dispensary.

"General Semantics in Vision and Visual Research," CARL F. SHEPARD, D.O.S., Department of Research, Northern Illinois College of Optometry, Chicago, (Summarized. Presented in full in Section II b)

SECTION I d and SECTION IV

SATURDAY, 2: 15 p. m., Room 30

"The Dilemma of Mental Hygiene," GEORGE S. STEVENSON, M. D., Medical Director, The National Committee for Mental Hygiene, New York.

"Youth in Chaos: Cultural Implications of an Extensional Analysis of Student Problems," C. B. CONGDON, M.D., Psychiatrist, Student Health Service, University of Chicago; Assistant Clinical Professor in Neurology and Psychiatry, Loyola University School of Medicine; Member of Attending Staff, Cook County Psychopathic Hospital.

"Note on the Nature of Pathology: An Extensional Analysis," CHARLES B. HORTON, M. D., Director, Dayton Guidance Center, Dayton, Ohio.

"Comments on the Use of General Semantics in Some Child Guidance Cases," FORREST N. ANDERSON, M. D., Director, Child Guidance Clinic, Los Angeles.

"Use of General Semantics in Marital Counselling and Vocational Guidance," DONALD McLEAN, Consulting Psychologist; Consultant, American Institute of Family Relations, Los Angeles.

"Implications of General Semantics Methodology for Social Work," ELEANOR PARKHURST, Rhode Island Children's Friend Society, Providence.

"Some Applications of General Semantics on a WPA Project," VOCHA FISKE, Instructor, Drama Department, Los Angeles City College.

SECTION II a and SECTION III a. (Joint Meeting)

SATURDAY, 10:30 a. m., Little Theatre

- "Language in Action: Report on Three Years' Work with College Freshmen," S. I. HAYAKAWA, Assistant Professor of English, Illinois Institute of Technology; (author of *Language in Action*, Harcourt, Brace, 1941; Book-of-the-Month Club Selection).
- "General Semantics and the Teaching of English in a Liberal Arts College: Some Conclusions after Three Years," VIRGINIA SHULL, Professor of English, Olivet College.
- "Application of General Semantics Methodology in College English Teaching," FRANCIS P. CHISHOLM, Instructor of English, Syracuse University and N. URSULA LITTLE, Associate Professor of English, Syracuse University.
- "Discussion of a Required Course in Semantics at a Teachers' College," JAMES P. PETTEGROVE, Instructor in English, Montclair State Teachers College, New Jersey.
- "General Semantics and the Study of Literature: A Preliminary Report on Work with College Freshmen," JOHN F. MOORE, Instructor in English, Connecticut College for Women.
- "Linguistic Study in Freshman English," WRIGHT THOMAS, Assistant Professor of English, University of Wisconsin.

SECTION II a, Continued

SATURDAY, 2:15 p. m., Little Theatre

- "Implications of General Semantics for Scholarship and Graduate School Training in 'The Humanities'," FRANCIS P. CHISHOLM, Instructor of English, Syracuse University.
- "New Light on the Study of Modern Drama: Footnote to Research," BESS SONDEL, Instructor of Speech, University College, The University of Chicago; Lecturer in Dramatic Literature and Speech, Indiana University Extensions.
- "Preliminary Notes for a Semantics of Music," STANLEY FLETCHER, Assistant Professor of Music, University of Illinois.
- "General Semantics in Teaching an Introductory Course in Aesthetics," MARIAN VAN TUYL, Assistant Professor of Physical Education, Mills College.
- "Extensional Methods in Teaching Elementary Foreign Language," W. B. DUNN, Instructor of German, University of Colorado.
- "General Semantics in the Teaching of English and the Modern Languages," GEORGE C. WATERSTON, Brooks School, North Andover, Mass.
- "Some New Methods in the Teaching of English," LOUIS C. ZAHNER, Head of English Department, Groton School, Groton, Mass.
- "Use of General Semantics in Teaching the Language Skills," DONA W. BROWN, formerly Teacher, Barstow School, in collaboration with M. KENDIG, Institute of General Semantics, formerly Principal of the Barstow School, Kansas City.

SECTION II c.

SATURDAY, 10:30 a. m., Room 28

- "From Classical Physical to Modern Scientific Assumptions," OLIVER L. REISER, Associate Professor of Philosophy, University of Pittsburgh.
- "On the Many-valued Logics," J. BARKLEY ROSSER, Professor of Mathematics, Cornell University.
- "The Use of General Semantics in Teaching Science for Purposes of General Education," CHARLES E. PARKINSON, Professor of Biology, Olivet College.
- "*Science and Sanity* as Peripheral Reading in General Physiology Courses," CHARLES E. PARKINSON, Professor of Biology, Olivet College.

"Applying General Semantics in Physics Courses," FRANK L. VERWIEBE, Assistant Professor of Physics, Eastern Illinois State Teachers College.

"General Semantics and Some Biological Problems," A. W. BRAY, Head of Biology Department, Rensselaer Polytechnic Institute.

"Horticulture as a Field for Investigation of Semantic Reactions," DAVID FAIRCHILD, Plant Explorer, U. S. Department of Agriculture, Fairchild Tropical Garden, Coconut Grove, Florida.

"Electro-encephalographic Transformations of Philosophy into Science: Ecological Implications of General Semantics," EDWARD F. HASKELL, Fellow of the Inter-divisional Committee for Unified Science, university of Chicago.

SECTION I I c, Continued

SATURDAY, 2:15 p. m., Room 28

"The Military School in a Democracy from the Point of View of General Semantics," S. W. HOLMES, Assistant Professor of English, The Citadel, Military College of South Carolina.

"Experiences in Developing a University Course in General Semantics," WENDELL JOHNSON, Associate Professor of Psychology and Speech Pathology, University of Iowa.

"General Semantics and the Basic College Speech Course," ELWOOD MURRAY, Professor of Speech and Dramatic Arts, University of Denver.

"Some Educational Implications Derived from *Science and Sanity* with Case Studies of Applications," W. J. OSBURN, Professor of Education, University of Washington.

"Prediction as a Requisite for Adjustment," ALVIN P. BRADFORD, Department of Philosophy, University of Texas.

"Can General Semantics Formulations be Included in the School Curriculum?," G. L. SCOTT, Department of Speech, University of Denver.

"Discussion of Semantic Revision of the Curriculum," GEORGE TRAMONTANA, Teacher of French, Theodore Roosevelt High School, New York.

SECTION I I I c.

SATURDAY, 10:30 a. m., Room 39

"Language and Democracy," HENRY NOBLE WIEMAN, Professor of the Philosophy of Religion, University of Chicago Divinity School.

"General Semantics and Public Speaking," IRVING J. LEE, Chairman of Speech Division, University College, Northwestern University; (author of *Language Habits in Human Affairs: An Introduction to General Semantics*, Harpers, 1941; In press).

"A Reconsideration of the Techniques of Controversy in Terms of the Formulations of General Semantics," CLARENCE A. PETERS, Director of Men's Debate, Northwestern University.

"General Semantics and Rhetorical Style," WILSON B. PAUL, Assistant Professor of Speech and Dramatic Arts, University of Denver.

"A Comparison of Discussion-Progression with Debate for Allness Behaviour," WALDO PHELPS, High School, Burbank, California.

SECTION III c, Continued

SATURDAY, 2: 15 p. m., Room 39

"General Semantics and the Speech Department," ELWOOD MURRAY, Professor of Speech and Dramatic Arts, University of Denver.

"Analysis of the Mechanisms in Students' Own Formulations of Their Speech Problems," BESS SONDEL, Instructor in Speech, University College, The University of Chicago; Lecturer in Dramatic Literature and Speech, Indiana University Extensions.

"Methods of General Semantics in Junior College Drama Instruction," VOCHA FISKE, Instructor, Drama Department, Los Angeles City College.

"The Application of General Semantics to a Case of Stage Fright," VELMA BISSELL HISER, Department of Speech, Grinnell College.

"A Semantic Evaluation of Aristotle's Theory of Catharsis," CAMPTON BELL, Assistant Professor of Speech and Dramatic Arts, University of Denver.

GENERAL INFORMATION FOR MEMBERS OF THE CONGRESS

Membership fee for the Congress is three dollars, except for students enrolled in the summer courses or workshops at the University. Luncheon and dinner tickets will be on sale at the registration desk August first.

Hotels are located about six miles from the campus. Street car number 8. Taxis, seventy-five cents. A list of hotels and motor camps will be available at registration desk.

The headquarters of the Congress and registration desk will be in the foyer of Margery Reed Mayo Hall at the University. Press and Congress office, Room 7, Mayo Hall.

TIME TABLE OF THE CONGRESS

Friday, August 1

- 8:30 A. M.—REGISTRATION (Please register promptly)
- 9:30 A. M.—OPENING OF CONGRESS AND FIRST GENERAL SESSION.
- 12:15 P. M.—LUNCHEON: Discussions
- 2:00 P. M.—GENERAL SESSION: Continuation of Introductory Papers
- 3:00 P. M.—SECTIONAL MEETINGS
- 6:15 P. M.—DINNER: Discussions
- 7:45 P. M.—GENERAL SESSION: Address by Alfred Korzybski

Saturday, August 2

- 9:00 A. M.—GENERAL SESSION
- 10:30 A. M.—SECTIONAL MEETINGS
- 12:30 P. M.—LUNCHEON: Discussions
- 2:15 P. M.—SECTIONAL MEETINGS and DISCUSSIONS
- 6:15 P. M.—BANQUET: Summaries of the Work of the Sections by Chairmen
- 8:00 P. M.—FINAL SESSION: Address by Alfred Korzybski and CLOSING OF THE CONGRESS

Sunday, August 3

- 10:30 A. M.—Post Congress Discussion Groups arranged by Section Chairmen